

Amateur Radio

November 1996

Volume 64 No 11



Journal of the Wireless Institute of Australia



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Two Metre FM
Transmitter
- * Review of Yaesu
FT-8500 Dual
Band FM
Transceiver
- * Horizontal Half
Wave Dipole
Above a
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Cover

Bron Brown VK3DYF obtained her amateur licence in the early 1980s so she could talk to her son. Here she demonstrates to her three year old grandson Jason how amateur radio can be enjoyed everywhere. Bron is using an Icom 215 with a 5/8th wave whip antenna while Jason drives the Competition Jinker.

BACK ISSUES

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editor's Comment

A Hundred Flowers

I have always been intrigued by the remark attributed to the late Mao Zedong (or, in earlier form, Mao Tse-Tung) in which, told that there were many divergent views being publicised, he said, "Let a hundred flowers bloom".

History has subsequently recorded how closely or otherwise this counsel of tolerance was observed, but it has always seemed to me to be a very praiseworthy philosophy. Like another philosophy, it may be, not that it has been tried and found wanting, but that it has not been tried!

Radio amateurs have always seemed to me to be a most divergent group, their most dominant characteristic being rank individualism! To find several amateurs having the same outlook on a range of topics is an unusual situation. This is a healthy outlook, particularly in view of the transient nature of much of our technology, in which the cycle time from inspiration through development and marketing to obsolescence may be measured as only a few years.

But besides technology there are other areas, relevant to us all, in which even less is "set in stone". Change is certain, and often rapid. In all this confusion and competition let us never lose sight of the fact that no-one is wholly right and no-one is wholly wrong. Tolerance, not belligerence, is healthier for us all!

Bill Rice VK3ABP
Editor

CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of *Amateur Radio*. A photocopy is available on receipt of a stamped, self addressed envelope.

■ WIA News

Roger Harrison VK2ZRH, Federal Media Liaison Officer

More Concerns Over Spectrum Licensing

There is still communications industry concern over spectrum licensing, expressed by the Wireless Technology Forum of the Australian Electrical and Electronics Manufacturers Association (AEEMA).

The Forum's response to a draft proposal on auctioning spectrum at 1.8 GHz, circulated for public comment recently by the Spectrum Management Agency (SMA), raised concerns over the treatment of incumbents affected by the spectrum licensing proposal. Concern was also raised over "the lack of provision for limiting uncoordinated devices outside allocated areas" operated on frequencies within a spectrum-licensed band.

Exploitation of the process of auctioning spectrum licences was of major concern to the Wireless Technology Forum. The executive director of AEEMA, Alex Gosman, said: "The proposed arrangements for auctioning the 1.8 GHz bands do not appear to be above exploitation by those who may have no intention of developing infrastructure or establishing a service, but who can position themselves to benefit by extracting unearned profits from incumbents or those seeking to establish a national infrastructure."

"The stated aims of the auction process," Gosman pointed out, "is to open up communications to new competitors rather than to generate revenue, and speculation must be discouraged."

In addition, in response to the draft Radiocommunications Amendment Bill 1996 (see WIA News, page 3, September 1996 *Amateur Radio*), the Wireless Technology Forum said they supported the proposal for rapid clearance and re-allocation of spectrum. The Forum's major concern is that there is no up-front mechanism to guide the SMA in

determining whether there is a need to consider the clearance of a band, whereas once the decision is made a clear cut process is established. To assist the SMA in considering the need to clear a band, the Forum suggested the development of a checklist.

Direction Finding on the Move

Since the Region 3 Amateur Radio Direction Finding (ARDF) Championships in Townsville in July, championship organiser Wally Watkins VK4DO and wife Dorothy went to Bulgaria for the 11th European Championships in early September, at which Wally was a referee.

Upon returning to Australia, Wally has worked on editing video footage of the Townsville Championships, copies of which are available by writing to PO Box 432, Proserpine Qld 4800.

News from across the Tasman has it that there will likely be a friendly ARDF event on New Zealand's North Island, scheduled for March or April in the new year.

While the next ARDF World Championships, the 8th, will be held in Germany during September 1997, Australia's ARDF organisers suggest local enthusiasts aim to compete in the next Region 3 Championships proposed to be held in South Korea in 1999. The

The concern for the Amateur Radio Service on the issues of spectrum licensing and band clearance is that, as the amateur bands between 148 MHz and 10 GHz are allocated on a secondary basis, the amateur radio community does not want to be caught by a "surprise" proposal to spectrum licence a band which covers, in whole or in part, any of these bands.

The WIA maintains an active "watching brief" on all activities related to spectrum use and allocation through the resources and activities of the Federal ITU Conference and Study Group Coordinator, David Wardlaw VK3ADW, and the SMA Liaison Team (of which David is also a member).

date and location, however, are subject to confirmation at the International Amateur Radio Union (IARU) Region 3 meeting to be held in Beijing late next year. Local ARDF organisers are planning to field a full team of 12 to represent the WIA in 1999, comprising three competitors in each of the four categories of Senior, Junior, Women and Old-timers.

The July Championships in Townsville proved that the Australian-designed and constructed ARDF equipment was up to the mark performing as well as seasoned, overseas-made equipment. Selection for the 1999 Championships would need to be held in 1998, to decide team composition on merit. This would need a national competition held at a reasonably central location. Dubbo, in central-west NSW, is suggested.

The eventual goal? – ARDF as an Olympic sport. That would really put amateur radio in the public eye.

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IARU News

David Wardlaw VK3ADW

Region 1 Meeting Sets Scene for Future Development

The tri-annual Region 1 Conference of the International Amateur Radio Union (IARU), held over 30 September to 6 October, considered 120 papers presenting proposals for the development of amateur radio, spanning almost every facet of amateur radio activities.

Representatives from 52 countries across Europe, the Commonwealth of Independent States (the former USSR), Africa and the Middle East gathered in Tel Aviv, Israel for the week-long conference.

The future of the amateur service was a major topic of discussion, arising from the discussion paper circulated earlier this year by the IARU's Future of the Amateur Service Committee (FASC). The Tel Aviv conference was the first round of deliberations on this discussion paper and the FASC's first report (see *IARU News*, page 4, October *Amateur Radio*). Debate surrounding the discussion paper will also be considered by the Region 3 Conference in 1997 and the Region 2

Conference in 1998, in time for the IARU to formulate a response to agenda items on the Amateur Service at the World Radio Conference in 1999.

Other papers considered at the Conference covered HF, VHF and microwaves, communications techniques, contests, the monitoring system (Intruder Watch) and help for potential amateurs in emerging countries. Working Groups discussed issues relating to ARDF, EMC, common licensing, VHF-UHF beacon policy, qualifications and licensing structure of the Amateur Service; international education links, 50 MHz VK-ZL calling frequency, and HF contests, among others.

Spurious Emission Limits

A proposal has been put to an International Telecommunications Union (ITU) working group studying issues regarding spurious emission limits, that Amateur stations be

excepted from meeting the Radio Regulations standard, and that less stringent emission limits apply.

Standards for spurious emission limits are to be discussed at WRC-97. The applicable standard for minimum attenuation below the power provided by a transmitter at the antenna transmission line is $43+10\log P$, or 70 dB (whichever is less stringent), for all services, except for those specifically excepted who have to adhere to another standard. Such services include space services, radiolocation, broadcast, and some services operating below 30 MHz. Some of these services have to adhere to a more stringent standard, others a less stringent one.

The Secretary of the Region 3 Association attended an ITU technical group meeting (ITU-R TG 1/3) in Paris earlier this year and put the case that Amateur Services operating below 30 MHz need only meet a spurious emission level of $43+10\log P$, or 50 dB (whichever is less stringent). P represents mean power at the antenna connector. The proposal was supported by the USA who submitted an information paper on measured spurious emission levels.

The final TG 1/3 meeting was scheduled to be held last month in Santa Rosa, California, over 24-30 October.

As a Matter of Record

Several errors, which we would like to correct, were perpetrated in the *WIA News* article "10 gigahertz gets a Guernsey", on page 6 of the March 1996 issue of *Amateur Radio*.

In the first paragraph, Wally Howse VK6KZ is referred to as "Wally House". At least the error is consistent, as his surname is also misspelled in the last paragraph. But to compound the problem, his call sign is then misquoted as VK6WG. For the record, it should be Wally Howse VK6KZ, in both places. VK6WG belongs to Wally Green, another well-known West Australian VHF pioneer. Apologies for that.

In writing, homonyms (words which sound alike and may have closely similar spellings) are a trap. Never let a computer word processor's spell checker have its head, as the following ditty illustrates.

SPELLBOUND

I have a spelling checker
It came with my PC
It plainly marks for my revue
Mistakes I cannot see
I've run this poem threw it
I'm sure your please to no
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My checker tolled me so!

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Getting a Permit to Use Your Licence in Japan

Details of procedures for foreign amateur licensees to operate in Japan have been provided to the WIA by the Japan Amateur Radio League (JARL).

Australian-licensed amateurs holding Unrestricted, Limited or Novice qualifications can get a licence to operate in Japan. Eligibility became effective as of 1 April 1996, according to the information supplied by the JARL.

Station licences are granted for a period of 12 months, and they are renewable, but not beyond the expiration date of your Australian licence. However, amateurs holding Japanese "permission for permanent residence" (visa category 4-1-14) from the Minister of Justice, Japan, can apply for a five year licence.

Station output power is used to classify amateur stations in Japan. The 1st Class JA licence is permitted all modes on all bands, and a maximum output power of 1 kW. The Australian AOCIP is equated with the Japanese 1st Class licence,

according to the JARL documentation. The 3rd Class JA licence equates with the Australian NAOCP, operators being permitted all modes on all bands except 10 MHz and 14 MHz, and 50 W maximum power output. The AOCIP equates with the JA 4th Class licence, permitting the use of all modes except CW, with access to all HF bands except 10, 14 and 18 MHz, using 10 W output, and all bands above 30 MHz with 20 W output.

You may apply to operate mobile/portable or a fixed station. However, separate licences are required. In addition, mobile/portable stations are limited to 50 W or less, while fixed stations under this system are permitted more than 50 W, but less than 200 W output. An application for a Japanese station licence must be submitted at least 60 days before the date you anticipate starting operation in Japan. Applications are handled through the JARL. A

different application procedure involving the Japanese Ministry of Posts and Telecommunications (MPT), which may take more than three months, is necessary if you plan to run more than 200 W output, according to the JARL, and you must go through an on-site station inspection.

Four items are required with a standard application for mobile/portable or fixed station operation. (1) A completed station information form (JARL-96-04); (2) a signed letter of authorisation (JARL-96-04A) allowing the JARL to submit the application on your behalf; (3) a photocopy of your current amateur radio operator certificate; and (4) an international money order (payable in Yen) for licence fees, or photocopy of a bank transfer confirming that the appropriate funds have been transferred to the JARL.

The licence fee for a mobile/portable station (50 W or less) is 12,000 Yen (about \$105), and for a fixed station (50-200 W) is 21,000 Yen (about \$180). Renewals cost about \$38.

Copies of the application procedures document may be obtained through your nearest Division of the WIA. **ar**



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■ Transmitters

A Micropower Two Metre FM Transmitter

Peter Parker VK1PK describes how to homebrew a useful low power VHF transmitter.*

Most home built transmitters seem to be for either eighty or forty metres. The presumption appears to be that VHF equipment is unduly complex to build and align. This need not be so. This two metre FM transmitter has just six transistors and one coil to wind. This project will provide valuable practical experience. Apart from discovering the joys and limitations of VHF micropower operation this transmitter can be put to a variety of uses such as in amateur radio direction finding, JOTA applications,

small-area repeater linking experiments, or as an aid to aligning 2 m FM receivers.

If you live at, or are willing to travel to, a good VHF site, this transmitter could be a low-cost means of becoming active on two metres if you already own a VHF scanner or other suitable receiver. Another possibility is to modify the circuit for six metres.

This unit, Figure 1, is a direct FM transmitter. It borrows heavily from the 2 Watt VHF FM Exciter described in

Amateur Radio over 20 years ago (see refs 1 & 2). The circuit is easily reproducible. The first four stages have been successfully used in experimental FM transmitters on six, two and forty metres.

The first two transistors comprise the speech amplifier stage, the gain of which is adjustable. Audio from this stage is fed to Tr3 whose capacitance changes in sympathy with the operator's speech. This capacitance varies the frequency of the 18 MHz Colpitts crystal oscillator whose frequency is doubled and then quadrupled to reach the 144 MHz band.

With only one tuned circuit in the output, this circuit is likely to emit significant levels of output on undesired frequencies. For this reason it is desirable that a bandpass filter be fitted between the output stage and the antenna. A suitable filter is described near the end of this article.

Most of the components used in this

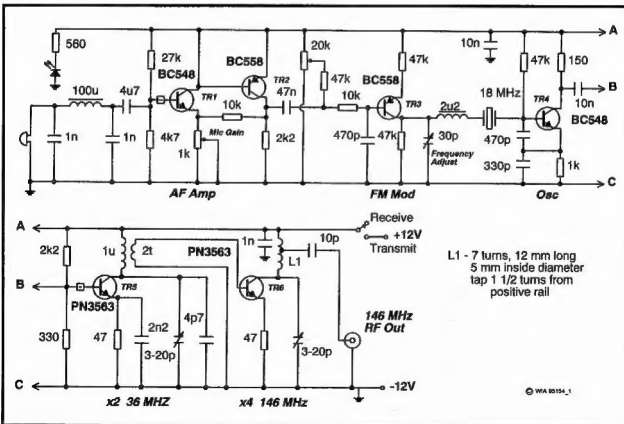


Figure 1 – Micropower two metre FM transmitter.

transmitter should be readily obtainable. Indeed, if you already have one of the older transistorised VHF high band transceivers, there will be only a few parts that need to be purchased.

Crystal

Probably the most critical and expensive component is the crystal. It should be for the input frequency of your nearest repeater. To reduce costs it is a good idea to build this circuit around available crystals. If the crystal frequency is appreciably lower than 18 MHz, an additional multiplier stage may be required. The efficiency of frequency multipliers falls as the multiplication ratio is increased.

If ordering a crystal, specify that it be suitable for a high-band Philips FM828 as this was the crystal type used in the prototype. While 18 MHz crystals from other models of transceiver could probably be used, it may be difficult to obtain coverage of the desired frequency unless changes are made to some component values around the crystal.

The microphone is a dynamic type. A receiver from a disused telephone performed well in the prototype. Alternatively, if a suitable DC voltage is provided from the positive rail, an electret insert may prove a suitable substitute.

While untried, transistors such as the BF115 or the 2N2369 should be appropriate substitutes for both multiplier stages. Be prepared to change component values for optimum results. Fortunately, with the construction technique recommended, this is a simple process.

The prototype was constructed on the copper side of an 8 x 10 cm piece of unetched printed circuit board material. Components with connections to earth are soldered direct to this ground plane, while others are wired in between. Where support is required, a high value resistor is used as a stand-off mounting point. This technique was chosen because of the project's simplicity, and the possibility of component changes during its development, made conventional printed circuit boards impractical. Another suitable construction technique would be Drew Diamond's "Paddyboard" where small

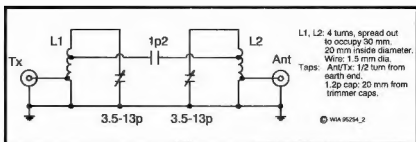


Figure 2 - Two metre bandpass filter.

squares of PCB material are glued or soldered to the main board to provide anchor points for components. A 10 x 12 x 6 cm diecast aluminium case houses the complete transmitter except for the filter which occupies its own enclosure.

As with any homebrew VHF design, some component changes, particularly in the RF stages, may be required to make your particular unit work as well as the prototype. This is why the use of a construction method that permits easy alteration is highly recommended for equipment of this type.

With a project such as this it is best to construct and test one or two stages at a time. Start by building the microphone amplifier. Note the ferrite bead on the base of the first transistor. This has been included to minimise the risk of circulating RF interfering with circuit operation. While speaking into the microphone, apply power and check the audio stages for operation. This is best done through the use of an audio signal tracer, although a pair of high impedance headphones in series with a 10 μ F electrolytic capacitor is an acceptable substitute. Adjusting the 1 k trimpot should vary the audio output.

Modulator

The next step is to assemble the FM modulator and the crystal oscillator stages. Construction of this circuitry should be fairly straight forward. To facilitate frequency changing, the use of a crystal socket is recommended. A frequency counter, two metre receiver or an RF probe may be used to verify the operation of the 18 MHz crystal oscillator. Once it is confirmed that a signal is being produced it must now be shifted on to the desired frequency. This is accomplished by adjusting the 20 k potentiometer, the trimmer capacitor

and the inductance in series with the crystal.

By listening to the eighth harmonic of the crystal oscillator on a two metre FM receiver, the transmitter audio quality can be checked. It should be clear and free of distortion. Adjust the 1 k audio level control so that the volume of the audio from this unit is similar to that received from other transmissions on the band.

If the audio is distorted, or it is not possible to shift the crystal to the correct frequency, some changes of component values may be required. More specifically, by changing the value of the inductance in series with the crystal as well as the nearby trimmer capacitor in conjunction with the setting of the 20 k potentiometer, it should be possible to arrive at a combination which provides a signal of good audio quality on the correct frequency.

Once this part of the circuitry is operating satisfactorily the frequency doubler stage may now be assembled. To make construction easier a 1 μ H pre-wound RF choke has been used in the collector. By winding a two turn coil over this inductance this stage's output frequency can be checked with a frequency counter. The 20 pF trimmer capacitor should be adjusted for maximum output on 36 MHz. If the output signal is unstable, first check to see that the tuned circuit formed by the RF choke and the 20 pF trimmer is properly resonant on 36 MHz. Failing this there is the chance that the transistor is oscillating on its own accord. The addition of a ferrite bead on the base of the transistor, a change in component values or the introduction of emitter degeneration are examples of steps that could be taken to stabilise the stage.

Assembly of the final stage should be

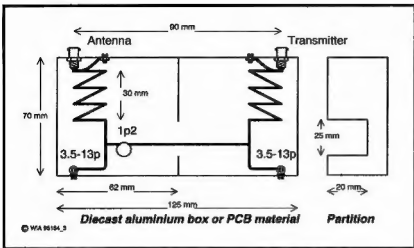


Figure 3 - Two metre bandpass filter internal construction.

straightforward. The comments made in the preceding paragraph also apply here, although particular care must be taken to ensure that the output tuned circuit resonates at 146 MHz and not some other frequency.

Filter

The filter shown in Figure 2 attenuates spurious emissions from the transmitter described above. It is built in a metal case to ensure proper shielding. Note the use of an internal partition (see Figure 3) to shield the two coils from each other. Provided there is provision made to adjust component values and coil taps, it is unlikely that the dimensions shown are especially critical.

Initial alignment of the filter can be done with it connected between an antenna and a two metre receiver. Adjust the trimmer capacitors in the filter for maximum signal strength on a signal near 147 MHz, such as a repeater output. Comparing the received signal strength with and without the filter in-line should give a rough indication of filter insertion loss. The difference in strength should be barely noticeable if the filter is working correctly. Such experiments are best done with very weak FM signals or carriers.

The filter may need further slight adjustment when the transmitter is connected to it. This test could be done with a spectrum analyser, or, alternately, by monitoring the transmission and tuning for maximum signal.

The power output of this design has

not been measured but it is probably in the 10 - 30 milliwatt range. The prototype provides a reliable, almost noise free, signal into a repeater approximately 10-15 kilometres from here when a simple ground plane antenna is being used. The low power means that it is possible to hear one's own signal through a repeater without any desensing being evident.

Micropower operation has a number of advantages and it is interesting to note that some commercial transceivers have a very low power (20 mW) setting to extend battery life. When transmitting with a few milliwatts through a repeater while monitoring its output frequency, a form of full-duplex operation becomes possible. Thanks to the FM capture effect, a higher power station will override your signal and be able to break in at any time, as long as you are

monitoring the repeater output while you talk by wearing headphones to prevent audio feedback. If all stations are using both micropower and conventional equipment the result will be similar to having a multi-way telephone conversation.

A two metre FM transmitter which can be readily extended and modified has been described. It is both simple and inexpensive to construct. At the end of the few hours it takes to build the rig you will have a transmitter that can be put to a variety of uses. This radio is sure to attract more attention at club meetings and on the air than the seemingly endless parade of cellular-phone look-alikes churned out by the major equipment manufacturers. Best of all it is a real AMATEUR radio you will be proud to use as it was put together with your own hands.

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AT

WIA News

Military Affiliates Drop CW

According to a bulletin from the American Radio Relay League (ARRL), all CW nets and other CW activity in the United States' Military Affiliate Radio System (MARS) were ordered to cease operation as of 1 October, 1996.

From then, the bulletin reported, no CW nets or other CW activity would

be allowed on any US Department of Defence MARS frequencies. MARS in the United States has had a long association with amateur radio.

A final MARS CW message was to be transmitted simultaneously on the three forces' MARS frequencies at 1300, 1530 and 1700 UTC on 30 September.

■ Equipment Review

Yaesu FT-8500 Dual Band FM Transceiver

*Reviewed by Paul McMahon VK3DIP**



Yaesu FT-8500 dual band FM transceiver and MH-39 microphone.

What Is It?

The FT-8500 is a dual band (2 m and 70 cm) FM mobile transceiver, with up to 50 watts of Tx output power on VHF and up to 35 watts of Tx output power on UHF. The receiver coverage is 110 to 174 MHz (VHF) and 410 to 500 MHz (UHF). The unit is of mid-size (140 x 40 x 160 mm) and weight (1.1 kg). The review unit was kindly supplied by Dick Smith Electronics and had the serial number 5L110232. Retail price is around \$1075.

First Impressions

There is only one knob on the box! The same, however, cannot be said of the MH-39 microphone which has a mass of buttons as well as a thumb wheel volume control. But this is only the start of the novelties of this radio. Apart from the one knob on the box, the vast majority of the rest of the front panel is taken up with a single large display. This display can show many

things, as well as just the normal frequencies and signal strength meters.

One of this radio's surprising features is the ability to show a variable resolution and width graphical spectrum analyser style display of activity centred on the main band. Tuning the set with the single knob moves a marker over the display to show you where you are relative to the other signals indicated. This is the first time I have seen a set with this function, and the first time for a long time I've seen a really new feature which I have actually felt was a worthwhile step forward. Also available on the display is a host of pretty little symbols to indicate various modes, and it can even show the supply voltage level.

The microphone connector is, as usual these days, one of those pseudo phone connector plastic click-in things. In this case the connection is hidden behind the removable front panel which, by the way, can be remotely mounted.

Audio quality seems good in subjective on air tests, and the receiver sensitivity seems uniform across the ranges covered.

The manual is also a novelty for these days as not only did it actually seem to cover all the features of the set but, wonder of wonders, actually included a reasonably detailed circuit diagram. More on this later. Also in the standard styrofoam and cardboard box was a mobile mounting bracket, with power cable, spare fuse, and miscellaneous nuts and bolts for the bracket.

Up front I should also mention that this is the first radio for a long time where I actually had to read the manual before I could use the basic functionality. Once read, though, it was pretty straightforward, with the trickiest thing I found to be the setting of the mute and volume levels for the main and sub band. In this case you had to press one of the buttons on the microphone to toggle between two LEDs (also on the microphone and marked L and R); the LED lit indicated whether the thumb wheel was setting the main or sub band volume level; you also held the same button down a bit longer till the L or R LED was flashing and then the thumb wheel adjusted the mute. I found this a pretty clumsy arrangement, often inadvertently adjusting the volume when I intended to vary the mute and vice versa.

Technical Bits

The Rx frequency coverage of the set is 110 to 174 MHz (VHF), and 410 to 500 MHz (UHF). The segment 110-137 MHz can be set up for AM or FM via a menu option. The Tx coverage is 144-148 MHz and 430-450 MHz. The manual and circuit/block diagram are very good for a change, the manual explaining clearly how to do everything, and the circuit diagrams explaining how the various bits of magic are achieved.

The specifications describe the set as a double conversion superhet with a 45.05 MHz and 58.525 MHz first IF on VHF and UHF respectively, with both bands using a 455 kHz second IF. Sensitivity for 12 dB SINAD is claimed as less than 0.18 μ V for a main band but only less than 0.25 μ V when a sub band. Selectivity is on a par with other similar



A lot of controls are packed into the MH-39 microphone.

boxes, as is spurious and image rejection. Rated audio output is two watts, and subjectively sounded clear and clean. For the Tx the rated power outputs were 50, 10, and five watts on VHF and 35, 10, and five watts on UHF, ie more or less the standard for this class of set these days. Peak current drain at maximum rated power out is given as 11.5 amps at 13.8 volts.

The set has a total of 112 memories. 100 of these are normal general purpose, by default arranged as five banks of ten in each band, however, the number of banks per band can be varied via the menus. As well, in each band there is a home, a priority, and four scan edge memories. Each memory can store either separate Rx/Tx frequencies or repeater offset, and can also store up to six character alpha/numeric names which can be displayed instead of the frequency. Tuning step sizes of 5, 10, 12.5, 15, 20, 25, or 50 kHz are available.

One of the neat tricks that appears to be now standard in dual band rigs is the ability to have both halves of at least the receiver operate on the same band. This so called U/U or V/V option has always intrigued me as to how it was done. Well, now the secret is out. With the

provision of a circuit we can at least see how Yaesu do it. In the FT-8500's case, the set is basically two complete receivers in the same box, one for each band. The only common component seems to be the micro and control logic. Forgetting about the transmitter chains, which are basically classical textbook designs, the receivers are where the interesting things are done. RF enters the set and is split via a diplexer into VHF and UHF for the separate receivers' front ends. Both receivers are structurally pretty much the same; both provide a choice of RF stages, one for the ham part of the band, and one for the rest/whole of band. The ham band one has obviously better filtering/shaping for out of band noise, etc and would explain why the figures quoted in the specs are always noted as being for in the ham portions only.

If you like, you could think of these RF front ends as being, in one case, what you would have traditionally seen in a ham rig back in the days of the IC22S and, in the other, something found in scanners. The control circuitry selects the appropriate front end depending on what frequency you want. The output from the front end is mixed in a double

balanced mixer (wideband diode bridge type) with the output of the appropriate VCO/PLL: the resultant IF flowing on to a pretty standard one IC (MC3372ML) FM receiver which includes the further mix down to the second IF of 455 kHz, mute circuitry, etc. The dual RF stages are the first bit of the V/V U/U story. In fact, the input to each DBM is switched between three inputs not two; the obvious ones are the ham and scanner type front ends for that receiver, and the third is the scanner type front end from the other receiver. This is possible because of the inherent wide band nature of the diode type DBM; it doesn't really care if the input is 110 MHz, or 500 MHz.

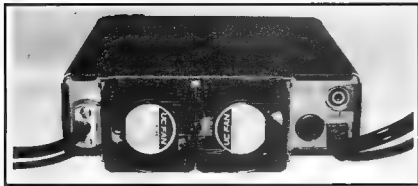
The generating of the appropriate local oscillator frequency from the VCO/PLL is the only other problem. To see how this is done we need to look at the frequency schemes used. In the VHF receiver, the first LO is on the high side not the more usual low side, ie $LO = RF + IF$. For example, let's say we want 146 MHz; then the LO needs to be $146 + 45.050 = 191.050$ MHz.

When, however, we want to use the VHF strip with UHF, an extra frequency doubler stage is switched in the LO line. So, in the previous example, the LO will now be $2 \times 191.050 = 382.100$ MHz which, if we use low side injection on UHF, gives us an effective RF input of $382.100 + 45.050 = 427.15$ MHz. That is, a LO frequency point roughly in the middle of the range required for VHF gives roughly the mid point for UHF.

For the nominally UHF receiver case the UHF loop actually has a special VCO running at roughly half the normal VCO frequency which produces a similar effect when combined with the VHF scanner type front end, and UHF DBM and IF.

Operation

The spectrum analysis feature of this radio made it really easy to quickly assess how busy the band was and where the activity was. In a contesting/scramble situation it would be invaluable for finding other stations. In practice it works somewhat like the normal scanning modes, you can set the upper and lower limits, the step size, etc and the set will scan the frequencies.



Twin fans on the rear panel quietly keep the FT-8500 cool.

The difference in this case is that, instead of stopping when it finds a busy channel, it just keeps on going but leaving a graphical representation of the relative signal strength on the screen. The feature has much in common with the somewhat older panoramic adaptor add-ons you used to be able to get for HF transceivers.

As previously mentioned, this set requires some getting used to in terms of learning how to do things, but once you have used it for a while you will have it personalised for your preferences, via the user programmable buttons on the microphone, and various menu settings. Once this has been done, then the primary purpose of the single knob to turn the set on and off, and to vary the frequency, is probably all you need under most circumstances.

While this is a bit of work in the default case, the set does have a couple of other features that will help out. For example, via the now pretty much standard packet (1200 and 9600 baud) connector, it is possible to both fully control/program the set via an attached PC, and to clone the setup to a second set. I would assume a disk backup and restore via the PC would also be possible. This set up of PC and set would make for a pretty much ideal packet station with all control being possible from the PC; basically anything you can do from the knob or mic buttons can be done via this interface.

As usual, I was unable to test most of the fancy pseudo pager and messaging facilities as they required an add-in board and/or another compatible set. Some of the features here seem to be getting a bit silly. For example, in this set

it is possible to have it, on receipt of an incoming message, either play a tune, send some CW, or play a user composed tune. In this last case you are limited to only three and a bit octaves, and only a limited subset of rests! Programming this via anything other than the connected PC option would not be much fun.

Conclusion

When I first saw this set, on superficial examination I felt Yaesu had got it all wrong and that this set would be a nightmare to operate. Then I realised I was reacting to the differences because they were not what I was used to. After more detailed usage and playing/analysis I have revised my opinion to the point that I see this as a bit of an experiment or first of a line, and a successful one at that. If you think about it you begin to see it as its designers intended. If you are going to use it mobile, the last thing you want is hundreds of knobs, etc to be playing with as you drive into the path of a semi trailer. Conversely, if you are going to use it as a base station, then you want as big a display as you can get, and who would want to be fiddling with knobs and buttons, when you could have a pretty graphical interface via your PC.

The FT-8500 has many new features. The most important, I felt, were the spectrum analysis display, and the computer control. All in all, I would be very happy to own this set. It has character, and there is no question it stands out in the crowd.

*47 Park Avenue, Watlie Glen VIC 3096

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There are some changes to some of the dates published in our last VK3LZ column so be sure to make a note of them.

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Gympie Ham Fest	5th.Oct
Ballarat Ham Fest	27th.Oct
Perth Ham Fest	3rd.Nov
Gold Coast Ham Fest	9th.Nov
Adelaide Ham Fest	23rd.Nov
Daycom (Melbourne) Icom Day	30th.Nov

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■ Antennas

Horizontal Half-wave Dipole Above a Counterpoise

Ralph Holland VK1BRH* shows why you need a counterpoise under your LF antenna.

Introduction

All antennas that are situated close to the ground are affected by that ground to some extent.

The most obvious effect is that the ground forces the antenna's radiation pattern to appear in the half-space above the ground. This is illustrated by comparing the radiation around a monopole fed against ground to that of a dipole in free-space. The monopole has twice the power in the hemisphere above the ground compared with the power in either hemisphere of symmetry for the dipole in free-space. The nature of this reflection of energy above the ground is governed by the polarisation of the antenna and the ground effectiveness. The dielectric constant and conductivity of the ground acts as a conductor and hence a reflector.

A less obvious effect is that the ground absorbs energy from the antenna; this energy is wasted in the

ground's intrinsic resistance (Ref 3)

The placement of an artificial ground, or counterpoise, can decrease the ground losses and enhance the performance of a horizontal antenna. The enhancement can be investigated by performing comparative measurements of the feedpoint resistance or by performing computer simulations.

This article is based on computer simulations using NEC-2 (Ref 1) for antenna systems at 1.825 MHz over average ground with a relative dielectric constant of 13 and conductivity of 5 milliseimens per metre [13,5]. The simulations were performed for ideal (loss-less) antenna elements with a diameter of 1.22 millimetres.

Terminology

Displacement is the term used for the distance between the counterpoise (which is the antenna system's lowest element) and the ground. Separation is the term used for the distance between

the driven-element and the counterpoise. Displacement, in the regular dipole case, is the distance between the dipole and the ground

Results

Figure 1 illustrates the efficiency of the horizontal half-wave dipole at various displacements. In general, the efficiency improves as the dipole is raised higher. Note that 100 percent efficiency is not achieved at a quarter wavelength displacement because, even at this height, the ground has introduced some losses into the antenna system.

Figure 2 illustrates the efficiency for various counterpoise systems and a dipole above ground. Notice that there is a knee in the counterpoise curves, which indicates that there is an optimum displacement. Be careful when interpreting the graphs because increasing the separation suffers from the law of diminishing returns; the efficiency of a counterpoise system must be compared with that of a dipole at the same equivalent height, ie the counterpoise displacement plus the driven element separation. Observe how a counterpoise improves the efficiency of a horizontal antenna system

Figure 3 shows the radiation pattern of a horizontal dipole displaced 0.07 wavelengths above ground.

Figure 4 shows the radiation pattern of a dipole offset by 0.05 wavelengths above a counterpoise that is displaced 0.02 wavelengths above the ground (same equivalent height as the dipole only system).

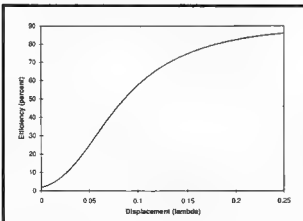


Figure 1 - Efficiency of a half-wave dipole above ground [13,5].

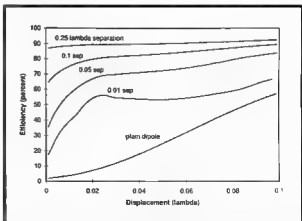


Figure 2 - Efficiency of a half-wave dipole separated from a counterpoise with various displacements above real ground.

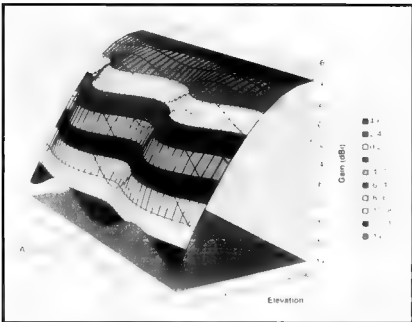


Figure 3 - Radiation pattern from a half-wave horizontal dipole 0.07 wavelengths above ground [13,5].

The horizontal dipole system has a minimum gain of 0 dBi at 51 degrees elevation, while the counterpoise system has a minimum gain of 0 dBi at about 42 degrees of elevation. Alternatively, antenna gain comparisons at all elevation angles show that the counterpoise gain is greater than the

dipole system by 2.53 ± 0.05 dB. This demonstrates that the counterpoise is a more effective ground system; the counterpoise reflects more energy into the half-space so less is wasted in the intrinsic ground resistance and more is radiated.

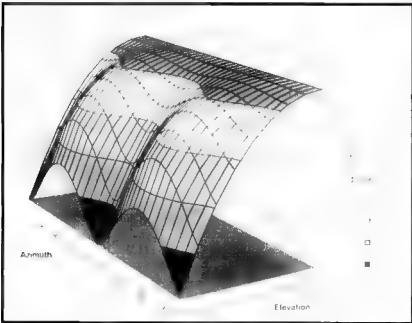


Figure 4 - Radiation pattern from horizontal half-wave dipole above a half-wave counterpoise 0.02 wavelengths above ground [13,5].

Conclusions

The placement of a counterpoise below a horizontal antenna can improve the antenna efficiency by a reasonable amount. The effect under a horizontal antenna is similar to the effect of elevated ground-planes for vertical antennas (Ref 2). You can measure this effect by observing an increase in field strength or by observing the lowering of your feedpoint resistance when adding the counterpoise (Ref 3).

At 160 m, with ground parameters [13,5], the effect peaks with counterpoise displacements of about 0.02 wavelengths above the ground.

Increasing the antenna system efficiency with a counterpoise increases the gain at all angles, effectively lowering the effective radiation angles.

References

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2. Short Vertical Antennas and Ground Systems, Ralph Holland, Amateur Radio, October 95.
- 3 Horizontal Antennas above Real Ground, Ralph Holland, Amateur Radio, October 96.

*M Hunkle Plus c, Kumbh ACT 2902

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WIA News

Now WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of September 1996.

L21024	MR O BERCICH
L21025	MR P HAMILTON
L21026	MR G G DAVIES
L21027	MR P ELLERINGTON
L21028	MR J PANETTA
L50350	MR B HOLLIS
L60348	MR W J KYNASTON
VK1GN	MR G G NAIRN
VK1NK	MR N PHILIPPA
VK2FZR	MR B J CAVE
VK2HCT	MR C THOMPSON
VK2PP	MR M D LEGG
VK5BIT	MR W
	KLOMPENHOUWER
VK6BGN	MR S R PAGE
VK6NRG	MR R GRAY
VK8TM	MR T MURPHY

■ Technical

Technical Abstracts

Gil Sones VK3AUI*

Pager Notch Filter

Many have experienced disturbance from pager transmissions on frequencies adjacent to the two metre band. In the USA the same problem exists even though the pager transmissions are four megahertz higher in frequency in the 152 to 156 MHz region.

In *QST* for August 1996, a notch filter was described which could give some relief. The filter was the design of Zack Lau KH6CP/1 who is an ARRL Senior Lab Engineer. The main article was by Ed Hare KA1CV. The filter has a somewhat easier job in the USA due to the extra frequency separation, but is of interest even in Australia.

The filter consists of a series tuned notch tuned circuit with an inductive matching circuit to restore the SWR at the amateur band operating frequency. The inductance uses a length of transmission line terminated with a capacitor. By varying the capacitor the inductive component at the other end of the line is varied. The line is just over a

quarter wave long. Teflon coax is used as it simplifies soldering. The filter is shown in Fig 1.

The trimmers used are Johnson types with a capacitance range of 1-14 pF. You need high Q components and I have seen these trimmers on offer at many hamfests. The coil details were missing in the *QST* article but four to five turns of 10-12 mm diameter should be OK. The coil has to resonate on the pager frequency.

The original was built in a small diecast box. Similar boxes are locally available. As an alternative to the coil you could try a length of Teflon coax line. This would operate similarly to the matching line but would need to be shorter than a quarter wavelength. Around nine to ten inches long would be suitable. In metric this is about 225 to 250 mm long.

Other techniques of reducing pager disturbance, which may be of interest, were mentioned in the article. The simplest was the use of a beam for

reception to reduce the signal received from the pager by pointing the beam away from the pager. Another technique is to use an RF attenuator in front of the receiver. If you can tolerate 10 dB less signal you could reduce the effect of the pager by 30 dB resulting in contacts which would otherwise be impossible.

If filtering can help you, then one of the locally manufactured filters may be an answer. These use helical resonators.

Medium Power 23 cm Amplifier

To obtain 50 to 100 watts in the 23 cm band often means using a water or air cooled valve amplifier. In *CQ TV*, May 1993, a solid state amplifier was described by Angel Vilaseca HB9SLV and Serge Riviere F1JSR. This amplifier used four parallel hybrid power modules to give an output of 100 watts in FM mode and somewhat less for SSB, possibly 50 to 70 watts before gain compression becomes excessive.

The RF power modules are Mitsubishi M57762 types which are available locally. The hybrid combiners and the 50 ohm load resistors are somewhat specialised but the suppliers were given. One USA design uses Sage wireline couplers as the hybrid couplers.

The RF circuit is given in Fig 2 which shows the layout. The amplifier is

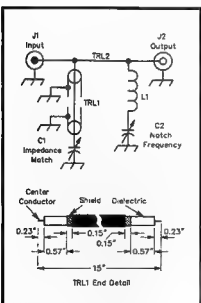


Fig 1 - Pager notch filter

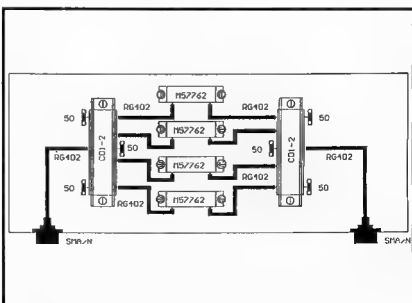


Fig 2 - RF circuit paths.

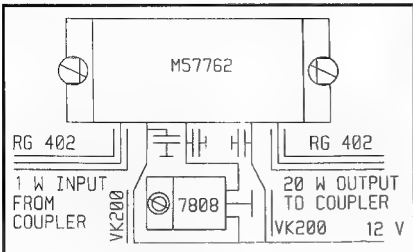


Fig 3 • Connections to Brick Amplifiers.

mounted on a copper plate which provides good thermal coupling as well as providing a good ground plane. The connections to one of the four brick amplifiers are shown in Fig 3. The DC power was run to the modules using copper bus of 2-3 mm diameter. The total current is considerable. Decoupling is very important and high quality microwave chip capacitors and ferrite beads are used.

The RF connections use RG402 cable which is soldered to the copper plate. The copper plate is bolted to a large heatsink. The potential dissipation is around 200 Watts.

The source for the 6 dB couplers was Nucléides SCD Av du Hoggar, ZA du

Courtabeuf, BP 117, 91994 Les-Usis 2, France, Tel 16 (1) 69 07 10 20; and for the termination resistors was Resistive Loads Elhyte Sarl, BP 34, 91620 La-ville-Du-Bois, France, Tel 16 (1) 69 01 68 51.

The results obtained are shown in Fig 4.

Homebrew Ladder Line

In the *Hunts and Kinks* column in August 1996 *QST*, edited by Bob Schetgen KU7G, an item on making ladder line appeared. The author was Paul A Johnson W7KBE. Paul used scraps of G10 PCB material as the spreaders.

The spreaders are shown in Fig 5, together with the means of attaching them to the feed line. The feed lines are 12 AWG and the tie wires are 28 AWG. If heavier tie wire is used then fewer turns are needed. The feed line is secured to the spacer by a loop of wire passing through the hole in the PCB spacer. The tie wire is then wound around the feeder wires and soldered to fasten it in position and to prevent sparking. The technique is shown in Fig 5.

The size of the spacer strips is 2.25 by 0.5 inches. The copper is, of course, removed. This could be done chemically with etchant or mechanically aided by heating to induce delamination of the copper foil.

*C/o PO Box 2175, Coulfield Junction VIC 3161

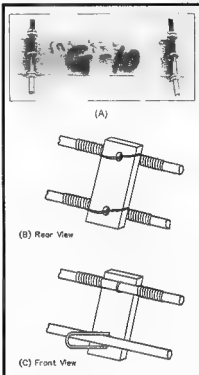


Fig 5 • W7KBE's homebrew open wire feedline.

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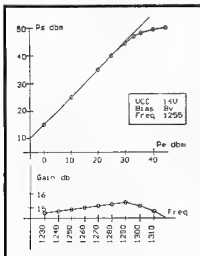


Fig 4 • Test results.

More Early Women in Radio in Australia

Christine Taylor VK5CTY continues her series on Australian women radio pioneers.*

As most readers will realise, ALARA has been gathering together records and stories of as many of the early YLs as possible during the last few years.

We now have over 50 YLs about whom we know something with, perhaps, five or six others for whom we only have a name and a date, often from an old call book. In the early call books each amateur was given his or her title as well as name and callsign. What a shame this is no longer done; it's such a help for researchers.

Reading the stories I found it very interesting to discover what prompted the ladies to take up our hobby. Often, as

you would expect, they had fathers, brothers or husbands with callsigns. It is less expected to find that there are some who belong to a family where they are the only one with this hobby or they were the first to start studying.

Joy VK2EBX, who was the ALARA correspondent for a number of years, lived in country NSW and used to listen to the truckies talking on CB. She longed to join them but resisted until her son decided to study. Once she got her full call after much study of WIA books and doing a correspondence course, she enjoyed amateur radio to the full.

She made many friends all over the world with whom she had regular "skeds", but she also used her other talents in connection with her radio. Do you remember the poems Joy used to include in the ALARA column every now and then? One of them is

reproduced here because it seems to express so well what amateur radio is to a YL.

Jessie VK3VAN and Elwyn VK2DLT became interested in the radio idea when they started planning to travel; within Australia for Jessie, and on a yacht for Elwyn. With our 4WD vehicles we can get well and truly off-the-beaten track, and on a yacht we can be far from land, so a means of keeping in touch is vital. With amateur radio if you can't reach anyone on one frequency you can try another. You need never feel alone as long as your battery and your radio keep working.

For some YLs amateur radio was an answer to a personal problem. Margaret VK4AOE was told she might lose her sight (fortunately she didn't) so she took up amateur radio as something she'd still be able to do if it happened. Margaret VK2MV broke her ankle so took up studying as something to do while she recovered.

There are nearly as many stories as there are amateurs. So please, if you are a YL and haven't told us your story, or if you know a YL who hasn't done so yet, do put pen to paper. We'd love to hear your story, too.

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I Like Amateur Radio

by Joy Collis VK2EBX

I like amateur radio, I really think it's fine

That I'll still be a "YL", if I live to ninety nine.

I like amateur radio and getting on the air,

Making friends around the world and contacts everywhere.

You can talk to Lapps in Lapland, Nepalese in Kathmandu,

Malays in Kuala Lumpur, or Peruvians in Peru.

You can talk to dukes and dustmen, or communicate in Morse,

Experiment with ATV, and RTTY, of course.

Put together bits and pieces, though at first the prospect balks,

A diode here, a condenser there, and listen to that -- it talks!

Experiment with aerials, it looks real good on paper,

But getting that lot in the air is quite another caper.

You can enter in a contest, gather points for an award,

Join a DX net, or "ragchew", one thing's sure, you're never bored.

Yes, I like amateur radio, and all the friendly sounds,

Removed from all the trouble and strife with which this world abounds.

It's a satisfying hobby, it will certainly do me,

'Til they write beside my name the words "Became a Silent Key!"

The Maryborough Amateur Radio Club and JOTA

Col Paton VK4BCP explains the evolution of his club's involvement with JOTA.*

The Maryborough Amateur Radio Club seems always to have been involved with Jamboree on the Air. Operations were mounted at various Scout troop dens, with little prior notice, and initiative in setting up equipment and antennas was a must. Innovation saw the use of a variety of antennas – dipoles, long wires, G5RVs, Windoms, Yagis and quads. Each location facilitated or prohibited various antennas. Results were so-so.

When the Scouting movement began

developing the Scouting reserve at Aldershot, 12 km from Maryborough in the scrub, the club's activities began to settle. Our operation location became static, up to a point. We seemed to be moved around the reserve, operating from huts, sheds, caravans, tents that leaked, and tents that didn't leak only because it didn't rain!

As time passed, the Scouts' facilities improved and so too did the club's. A two-stage steel wind up tower was acquired. The tower was modified to tilt

over and a permanent tower base was constructed on site, thus eliminating the breath-holding exercise of raising a loose, hand-guyed tower with a mind of its own.

Further settlement took place. A long power lead that tripped everyone replaced engine driven alternators devices which some declared produced more AF than RF! Buildings appeared around the tower base and, when they settled at their final orientation, underground power lines brought power and light to them. So settled and organised had we become that JOTA setting up was a "Ho-hum. Same as last year, chaps." affair. Still, in spite of a rotator and a three element beam, results were not good, and we knew why. Trees! To get above the trees was beyond our capabilities and the dream went into the "wishful thinking" file in the "too hard" basket.

The Scouting movement told us that they were considering the erection of an abseiling tower on which, when built,

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we could mount our antennas and be above the canopy of trees. Various ideas came and went. A steel tower from the railways, a tower from a sawmill, even a wooden forestry tower. But without anything positive from the Scouts, it was "pie in the sky", not beams!

Suddenly, to our amazement, a scouting supporter who had the know-how, the equipment, the material and the motivation, built a 12 metre, five stage, square, wooden poled abseiling tower at our very door. It seemed to appear almost as suddenly as Jack's Beanstalk.

How to mount the antenna generated a flood of discussion, research and thought. It was decided to mount our wind-up tower on one of the posts. Two brackets were designed and fabricated to hold the tower at its base and near its top against one pole. The abseiling tower builder cheerfully hung in a harness from a skyhook outside the tower to drill the holes and bolt the brackets to the post. Now to get the tower and antenna into the fixtures.

A weekend before JOTA was chosen for the dummy run, and the moment of truth. Over the pulley mounted in the top bracket, a wire rope was passed from a winch to the ground and attached to the base of the wind up tower. The winch pulled the tower base to the lower bracket where a fulcrum pin was inserted and the tower hung upside down. The rope was re-attached to a point near the top of the wind up tower and the tower top rotated out from the abseiling tower. The rotator and a newly acquired six element log periodic tri-band beam were attached and, with the winch, the tower was rotated about the fulcrum pin in the base and bracket to the vertical, where it was secured in the top bracket. The inner section was cranked up and our antenna was metres above the canopy. The dummy run was perfect. No turmoil, hassle or trauma, and it was so successful we left it there.

We must have done something right. JOTA results were the best ever. Contact numbers and countries accessed far exceeded previous efforts. However, we were unable to receive the official broadcast but, from what we have since learned, that was not our fault.

Now the VHF devotees, wishing to get in on the act, want their beams on the



The Maryborough Amateur Radio Club's JOTA antenna installation on the abseiling tower at the Aldershot Scouting reserve.

tower above the tree canopy. This requires a rotator able to turn beams around the tower. The development of our JOTA operations still continues.

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■ Operating VK2COF Aeronautical Mobile

David D Coffey VK2COF tells of his ferry flight across the Pacific in a single engine aircraft, VH-OVA.*



VK2COF arriving at Coffs Harbour. Note the HF radio on the seat, and the fuel drums behind the seats.

This story is of a flight I undertook to deliver a new aircraft from the USA to Australia across the Pacific in June and July 1995. The aircraft was a brand new Mooney Ovation, a fast, four place, sophisticated, single engine low wing with retractable undercarriage. The engine is a Continental, six cylinder, developing 280 hp driving a three bladed propeller.

Navigation and communication equipment as installed permanently in the aircraft included two independent VHF radios in the aircraft band (118-136 MHz), VOR, ILS, ADF, transponder, auto pilot and a Garmin 155 GPS system. What was not included, and had to be set up as a temporary installation, was HF communication. This is necessary to maintain contact with Flight Service (FS) and Air Traffic Oceanic Control (ATC) when out of VHF range. You will find some of the trials and tribulations in

the HF set-up in the following narrative.

The Mooney was to be picked up from the factory in Texas, with Australian registration. Kerrville is a very pleasant and clean town, with a population of about 18000 and situated 100 km north west of San Antonio. It is in the Texas hill country, a rolling plateau about 1600 feet high with a dry climate and a fairly low rainfall. From there I was to fly to Oakland in California which is on the east side of the Bay from San Francisco. There the aircraft was to be prepared for the ferry flight by installing additional fuel tanks and the HF radio. HF radio is very uncommon in domestic aircraft in the USA as practically the whole country is linked up with the VHF comms network which is operable in most places at ground level. The same applies to radar identification.

In order to prepare myself for the temporary installation of the HF radio, I

undertook some trial tests on a jury-rigged set-up on a similar aircraft that I owned at the time. I tried this out at our farm near Wellington, NSW. The aircraft's electrical system is 24 volts so the first thing was to purchase a DC/DC converter, 24 to 12 volts at 20 amps rating. I was assuming at that time that I was going to use my Kenwood TS440S. The converter, Australian made, was purchased in Sydney.

The HF antenna that was installed on my Australian Mooney, VH-JXC, was a long wire running from the side of the fuselage below the passenger's window, out to the end of the horizontal stabiliser and thence to the end of the trailing edge of the wing. The long wire was then a V shape about 18 feet long with an included angle of 100 degrees.

In the Australian scene, installation of HF radios is, or used to be, quite common because of the restricted coverage of VHF. In my case I had a Barrett HF radio made in WA suitable for 24 volts with the antenna fed through an antenna tuning unit. This is a quite bulky ATU switched by solenoids to pre-set L-C assemblies, and tuned to discrete frequencies in the 3 to 8 MHz aircraft bands.

For the Pacific region the HF channels are quite different from the Australian ones, and the Barrett installation was not a possibility, principally because of the bulk of the components. So I decided to use the Kenwood TS440S, accompanied by a "Matchall" antenna tuning unit which is a solid state device and seems to present 50 ohms to the transmitter for all frequencies. It does work, but I wouldn't like to guess as to the efficiency of the unit. So, with the TS440S sitting on the seat of the aircraft on the ground, connected to the 24 volt supply by the DC/DC converter, and hooked up to the long wire antenna by the Matchall, I tried it out and it seemed to work quite well. At least I contacted a friend of mine on 7070 kHz and he reported a reasonable signal. So, with that limited testing, I was reasonably happy that the system was OK and also with the knowledge that previous ferry pilots had apparently used similar installations.

The time eventually arrived and I picked up the gleaming new aircraft at Kerrville and flew it to Oakland via

Tucson, Arizona. There a small company of specialists in the installation of ferry tanks proceeded to take out the rear seats, wrap them in plastic, and stow them away. Behind the front seats were installed two 44 gallon (200 litre) drums side by side, one behind the other. Temporary plumbing and venting was installed and then came the HF radio.

For this I had decided that the Kenwood TS50S was a more suitable unit, being a lot smaller and with equivalent power, so I bought one in Oakland. I had brought with me the Matchall, DC converter, harness wiring suitably prepared and coaxial cable, and antenna wire and insulators and other hardware. I had also bought the ATU that goes with the Kenwood, the AT50. However, I found to my dismay that, although the AT50 can be remotely operated from the transceiver, it wouldn't tune up most of the frequencies required for aviation use.

In about an hour we had the HF radio sitting on the seat beside the pilot, the converter stuffed under the pilot's seat, the Matchall in the fuselage and ready for a trial on the ground at Oakland. The transceiver fired up and, using an appropriate 5 MHz frequency for local flight service, contact was made and so we were all happy. The main cause for concern that remained at this stage was the extremely cramped cockpit because the ferry tanks had to be kept as far forward as possible, for centre of gravity reasons. The HF radio sat on the seat beside me, along with a host of other things.

A couple of days later, after the installation of the ferry tanks was completed, a flight plan was filed for the first leg of the journey from Oakland to Hilo in the island of Hawaii, a distance of about 2100 nautical miles and an anticipated flight time of around 13.5 hours using a low power setting for economy and an expected ground speed of around 160 knots.

At daybreak I set off with the aircraft fully laden with fuel (about 20% overload), and was given clearance to fly more or less direct to Hilo at 10,000 feet, reporting every hour and a quarter at predetermined coordinates. VHF range over the ocean in this part of the world was enhanced by beam type operation and communication could be

maintained for the first hour and a half. Thereafter it was on to the HF radio with frequencies as adopted by Flight Service in the 5, 6, 8, 11, 13, and 17 MHz bands.

It was requested that I call on 6673 kHz for the next reporting point. All HF communication in the aeronautical service is on upper sideband. At the appropriate time I called on 6673, with no result! I tried five other frequencies. Still no result! On quite a few of the frequencies, I had the annoying feature that, when speaking into the microphone, my own voice would come through quite loudly into the headphones so there was clearly quite a bit of feedback occurring and I didn't know why.

Luckily, on route from California to Hawaii there were many 747s and such aircraft in the air most of the time within VHF range. So I called out for assistance on 128.95 MHz, the air to air comm frequency. Instantly an American voice came back and I had to ask him to relay my position report to FS. Incidentally, FS and Air Traffic Control in the American section of the Pacific Ocean is run by a private company ARINC. There are others too, like MacLellan Radio, who operate in the same area. Anyway, the American voice, who turned out to be the captain of an United Airlines 747, gladly relayed my position report and so that was that for the next hour or so until the next position report.

I had arranged with amateur radio friends at home that we would have skeds on HF and the selected frequencies were 7097.5, 10125, 14305 and 18125 kHz. Getting on now to late morning, I tried 14305 kHz and received quite a few replies from people on the northern side of the equator, but none from Australia. I had a chat to hams in Los Angeles and Detroit and there was even a lady from Alaska.

The next position report went OK. I managed to contact FS who informed me that I was "loud and clear" so some of my concerns about HF had abated somewhat. I was still getting this wretched feedback, specially in the 5, 6 and 8 MHz range. With about 11 or 12 reporting points across the Pacific to Hilo I suppose I had to get three of them relayed by overflying aircraft.

This was alright while there were

overflying aircraft, but I was concerned that, on the next leg of the flight from Hilo to Pago Pago in American Samoa, I wouldn't be able to maintain HF communication because there were very few, if any, overflying aircraft in that section of the Pacific.

After twelve and a half hours of flying I eventually landed at Hilo with a very pleasant welcome from Hilo ATC. I stayed at Hilo for a couple of days but didn't do any ham contacting as I was fairly busy preparing for the next leg of the journey, attending to customs matters and the like. I knew now that the TS50S was working OK but I was beginning to have a few doubts about the converter as, from time to time, it being a switch mode design, would trip out when overloaded and would need to be reset by switching it off and then on. This was a bit disconcerting, especially in flight when you suddenly find you have no power to the radio. The unit had a 20 amp rating and I had checked the actual current drain of the TS50S beforehand and found that, generally, it was between 16 and 17 amps and at no time exceeded 19 amps.

There wasn't much I could do about improving the situation at that stage so I hoped for the best and set forth on the long journey to Pago Pago just before sunrise two days after I had landed in Hilo. Expected flight time was 14.5 hours. The airport was not open at that time of the morning and there was nobody in the tower. The procedure was to contact Honolulu FS on VHF. This I tried, but got no response. Luckily, under these circumstances there is a PAL system (pilot activated lighting) which operates by the pilot keying the microphone three times within five seconds on a selected VHF channel. This was done and the whole airfield burst into light with every runway and taxiway light coming on.

I had previously put in a flight plan at 4 o'clock in the morning by telephone to Honolulu FS, and obtained a very thorough Met briefing by a 24 hour weather station on the ground at Hilo airport. I taxied and took off from the appropriate runway and managed to contact Honolulu FS after becoming airborne and passing about 500 feet. Once again the position reports were required every hour at predetermined

coordinates. The first one went OK, as did the second. On the third position report, three hours out of Hilo, I was unable to contact FS on any of the frequencies and, believe me, I tried them all.

This time there was no aircraft overhead and VHF was no use either. It is expected when you are flying on full position reporting, as I was doing, that a report would be given within two minutes or thereabouts of the previously given estimated time of arrival (ETA) at that position report. If such is not received, under the Search and Rescue (SAR) procedures the first stage of those procedures is initiated, ie, the uncertainty phase.

Since about 15 minutes had elapsed from when I should have given the position report, I was concerned that FS might be activating SAR. However, I kept trying on different bands and, as a final resort, I tried 8843 kHz. Success! FS from Honolulu came in and she said she was receiving me "loud and clear" and did not seem to be in any way concerned about the missed report. Such are the vagaries of HF transmission.

Earlier on in this flight I had tried to contact my Australian friends without any luck, but I did contact some Americans, one of whom was Ray K6VX. We had a nice chat and he said that he had to leave and go to work. We said 73 and that was that. This was on 18125 kHz. Nine hours later I was taking to others on 18125 and Ray came back having spent his 8 hours at work to find me still flying up there and still contactable. That was rather nice; I had the feeling that someone was looking after me.

On passing the equator and entering the southern hemisphere, I made my first contact with an Australian friend, Graham on VK4BGC. Then followed VK2AKF, VK5ZH, VK2WBJ, VK4BAM, and thereafter a host of others came in and no further problems were had in contacting Australian amateurs. It was all very reassuring.

After 13 hours I duly arrived at Pago Pago and overnighed at the "Rainmaker Hotel" of Somerset Maugham's Sadie Thompson fame. I did not take any handheld VHF equipment with me so no contact was made on the ground there.

Next morning the flight was relatively

short, four and a half to five hours to Nadi in Fiji. On leaving Pago Pago, the Flight Information Region (FIR) becomes Fijian and there a new problem arose, namely the understanding of the Fijian accent over the airwaves. I daresay they had equal problems with my accent, but sometimes I simply could not understand what they were saying no matter how many times they said it. Anyway, position reports were given and I soon arrived within VHF range of the Fijian islands where clearances were passed to me (but sometimes not understood). Nevertheless, I arrived at Nadi airport and was given a parking bay in the International Airport beside a B767. I must admit it looked a bit ridiculous.

The last leg to Australia was from Nadi direct to Coffs Harbour. About half way the FIR changes from Fijian to Australian with alterations again also in HF channels. A reader may be wondering how it was that all these frequencies were available on a TS50S. Well, that is a secret, although not a very well kept one as most amateurs would know.

After departing Nadi it didn't take long to get out of VHF range. Because of the noise level in the aircraft, headphones are a must for the TS50S, or any other amateur rig for that matter, because of the miniature loud speaker in the set. In the TS50S the headphone jack is one of those tiny 3.5 mm ones and I had an adaptor which went from 3.5 to 6.5 mm which was suitable for the aviation headphone plug. The physical size of the plug and adaptor moving around in the small jack socket soon started to break it up internally, so that apart from any other duties such as flying the aircraft, managing fuel, etc I had to physically hold the plug and jack assembly in order to make contact with the headphone. This proved to be a great annoyance and, as a matter of advice, I would recommend not using any of those adaptors. If the same situation occurs, use a single 3.5 mm plug and connect it by flexible wires to a 6.5 mm socket.

By careful nurturing, the system did stay together and was able to make contact eventually with the Australian FIR on 8867 kHz. It was a welcome sound to hear the Australian accent,

which is perfectly understandable. I proceeded through to Coffs Harbour, arriving after ten and a half hours flying into headwinds and after a somewhat eventful trip.

The very first thing I did after clearing customs and being greeted by my wife was to remove the HF system.

A few weeks later, on thinking over the feedback problem that I experienced, I rang the maker of the converter and asked him if the switch mode circuitry generated spurious RF. "Yes" he said with somewhat disarming honesty. "The WA fisheries people have been complaining about that. However, we have since fixed the problem and if you would like to bring yours in we will swap it for another. Yours was from the same batch that went to WA".

I did swap it over, but felt it was all a bit too late. I haven't had the chance to find out whether it caused the feedback problem anyway.

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ALARA

Sally Grattidge VK4SHE*, ALARA Publicity Officer



Bev VK6DE opening ALARAmeeet 96.

New Member

We welcome new member Barbara KA3VXR who was sponsored by Robyn VK3ENX.

ALARAmeeet

(report from Dot VK2DDB)

Perth ALARAmeeet is over and the memories will be with us forever. A total of 72 people attended the get-together and we

were thrilled to have some DX YLs with us, Rajia SM0HNV, Elizabeth VE7YL, and Aimee FK8FA who was accompanied by OM Michell FK8GO. From across the pond came 20 ZL1s, ZL2s and a ZL3. The rest were Aussies from VKs 1, 2, 3, 4, 5, 6, and 7.

Our venue for the activities, The White House, was a beautiful historic home (now a

reception centre) and it was ours for the whole weekend.

The official photos (complete with intermittent flash), baby photo competition (with a bit of cheating), craft table, special effort and door prizes displayed, morning and afternoon teas, and two lovely meals, all took place at the Centre.

To save us from getting lost in car convoy, Bev VK6DE arranged a "bendy" bus with a very patient driver, Franz, who seemed to enjoy our shenanigans and was able to manoeuvre that vehicle through the tightest corners.

We had a tounst trip through Perth to the Wildflower Festival at Kings Park. Then a ferry trip down the Swan River (seeing where all the rich and famous live) to Fremantle where we roamed around the markets and visited some historic places.

Sunday afternoon saw the end of the formalities with prizes being awarded to those who managed to do the more bizarre things. For example, Betty ZL1UBZ, Bob ZL1BBZ, Marion ZL3TVF and Lester ZL1VF all won "Mars" awards for coming via the long path; they flew to Perth, Scotland before coming to Perth, Australia!

On Monday, our patient Franz and his "bendy" bus took us to the overflowing Mundaring Weir (along with thousands of other people) where Lester ZL1VF got lost and was returned to the bus in a Ranger's van with police escort.

Our thanks go to Bev VK6DE for all the planning and preparation she put into the 1996 ALARAmeeet. Our next meet will be in Brisbane in 1999, so do try and be there for a marvellous time.

*Chs PO Windstock, QLD 4816
Tel: 077 788 642

BT



Three of the 20 ZL participants at ALARAmeeet 96. (l to r) Merv ZL2AVY, Biny ZL2ZY and Gellis ZL1LK.

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Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies (again depending on propagation conditions):

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AMSAT Australia newsletter and software service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia
GPO Box 2141
Adelaide SA 5001

may be able to contribute significantly to the state of the art.

Because much, if not all, of the required hardware is already in use, the bulk of the initial task would seem to be in adapting software to allow running IP over PACSAT. Karen and other Russian amateurs are interested in this project. U5MIR and RV3DR are supportive of the concept and there would be licensed amateurs aboard the spacecraft, the ALPHA, which is an international space project. He is interested in applying this idea to ALPHA flights.

A group of Russian amateurs has begun to design low cost satellite ground station hardware for use at the gateways. They are seeking comments on the idea and others to help in making it a reality. Clearly the project will require the help and cooperation of amateurs worldwide.

Anyone interested in helping to further develop this project is asked to contact Karen RA3APW at karen@gw.ra3apw.ampr.org or sysop@ampr.demos.suor via KO-23, KO-25 satellites. Also, anyone knowing of someone else who might be interested and able to help are asked to forward this note to them.

This note was written and posted for RA3APW by N6GN.

The Last Telemetry Frames from OSCAR-13

A competition with a difference. An "Operating Event", suggested by Eric WD3Q and already in progress. Don't worry about starting too late. As I said this is a competition with a difference and certainly not one where the traditional early bird gets the worm. In a way the opposite will be true.

Eric's suggestion is that recognition should be given to the amateur who captures the last or nearest to last telemetry frames transmitted by OSCAR-13 before it burns up on re-entry in early to mid December. The reason behind this suggestion is twofold; firstly to increase awareness among the amateur community of the telemetry itself, and also to encourage more amateurs to become interested in the software and hardware necessary to copy and analyse the telemetry.

No doubt the term telemetry will put a lot of people off. It sounds too hard. You have to be a techo, etc, etc. Not so. Telemetry from some amateur radio satellites can be copied and displayed on a PC using no more than a packet type terminal program and a TNC.

DO-17 (DOVE) is an example of this type



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of telemetry. UoSat-11 has had an elaborate telemetry system running for many years. It requires a special decoder but it is easy to build. Software is available from UoS for the analysis and display of this telemetry. When you do this you are monitoring the "health" of the satellite.

AO-13 telemetry uses PSK (Phase Shift Keying) modulation for its telemetry and therefore it needs a PSK demodulator. There are several available. The industry standard display program is P3C.EXE written by Charles VK5ACM in collaboration with Graham VK5AGR. Although written for AO-13, the software is not specific to that satellite. Nor is the demodulator. P3D will also use 400 baud PSK in a similar format so you will not be wasting your time and money if you set up to take part in this competition.

The most popular hardware is a plug-and-play development by James Miller of his original AO-10 PSK demodulator. The original required a bit of setting up but was very capable and outshone all the others in the way it could extract data from noise. The latest version is a true "switch on and go" unit.

There are no prizes (save notonety) for Eric's competition, but Graham VK5AGR has offered a year's free subscription to the Amsat-VK newsletter to the person who records the last (or latest) Q block from AO-13.

At first glance it would seem that, with the perigee currently in the northern hemisphere, we in the south would not be ideally situated to do well in this competition. However, anything can happen in the last few orbits as a satellite re-enters the atmosphere. No-one knows for sure where AO-13 will be when it transmits its last telemetry. Competitions aside, it would really be something to hear those last frames!

UNAMSAT-11

At the time of writing, this new bird is undergoing commissioning. When released for general use in the near future it will be known as Mexico-OSCAR-30 or MO-30. Keplerian elements are currently being included in the NASA and Amsat sets from the usual sources. More news and technical details of this satellite next month.

MAELLE, a New Amateur Radio Satellite from France

From Bernard Pidoux F6BVP, via Amsat News Service. During the 25th General Assembly of the International Radioelectricity Scientific Union (IRSU) held in Lille, France from 28 August to 5 September, Christophe Carlier F4AAT,

member of Amsat-F and also a key member of the project team now developing a French Amateur Radio satellite called "Maëlle", was presented with the first place prize. The international contest was organised by the French, Belgian and Swiss Committees for Scientific Radioelectricity on radio science and technique, and was held to commemorate the 100th anniversary of the first radio transmissions.

The Maëlle satellite is now under construction in France as a cooperative effort of CAC (Club Acrospatial Cellois), RACE (RadioAmateur Club de l'Espace) and Amsat-France. It is a MICROSAT-class satellite weighing 50 kg, and it is planned that Maëlle will carry a 9600 BPS packet radio transponder similar to the UoSats.

JAS-2, Fuji-Oscar-29

Amsat News Service reports that FO-29 is in good health and its services are being progressively made available to users. Many QSOs have been heard and signals are strong and clear.

There was some confusion regarding keys but this is not unusual for a new satellite.

Good keys are available on KO-23. By the time you read this the key problem should be sorted out and the normal sources should be reliable. The digtalker has been tested and is working well. 9600 baud mode has been tested and is OK. It should be scheduled in shortly.

Next Month

The amateur radio satellite service must rank among the fastest moving and most exciting areas of amateur radio. Just look at the events of the last year or so. It's all a bit hard to "get your head around", to coin a modern phrase. In next month's column I'll try to bring these events together to give an overview for the benefit of any (like myself) who are finding it all a bit overwhelming. More news on Maëlle, SunSat, MO-30, MIR/SAFEX, JAS-2 and of course Phase 3D. Stay tuned and keep those antennas pointing UP!

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E-mail: vk3jp@amsat.org

QSP News

Notable Amateur Also Rifle Champion

The editor recently received a letter and other information from David Thompson VK2BDT regarding the achievements of his fellow-member of the Goulburn Amateur Radio Society, Jim Andrews VK2BO.

Jim has been an amateur for many years (*I first worked him in 1948! Ed*) and for most of those years has been among the top scorers in the annual Remembrance Day Contest (*this year, 1996, I worked him on 80, 40 and 20 metres and each time his score was about ten times mine! Ed*).

But Jim is not only a notable amateur. He is also a champion rifle shooter. As published in the Goulburn "Times" during August this year, he has achieved the dual honour of being the Southern Tablelands Rifle Club's off-rifle champion and handicap champion for the 1995/96 shooting year.

These achievements are all the more notable when we realise that Jim is approaching the age of 80 years. Somehow he also finds time to be a member of the Goulburn Probus Club. Truly a man who excels in many things!



Jim Andrews VK2BO on the rifle range (photo courtesy Jackie Ranken and "The Times" Goulburn).

Awards

John Kelleher VK3DP - Federal Awards Manager*

With great pleasure, I introduce information from Paul VK2KVV, Publicity Officer for the Wagga Wagga Amateur Radio Club.

City of Wagga Awards

The City of Wagga Award Net is run every Tuesday evening at 1030z on 3605 kHz + or - QRM.

The Basic Award consists of two points for working VK2WG/Portable Net controller, and one point for each member worked, up to a total of 10 points, or better. Applicants must submit a log extract listing time, date, the station worked, and signal reports exchanged. This log extract, along with a fee of \$3.00, should be sent to: The Awards Manager, James Jessiman, PO Box 294, Wagga Wagga NSW 2650.

Silver Upgrade for City of Wagga Award

An additional 40 points is required for this award. The basic award must have been worked, applied for, and received. For the Silver upgrade there should be 24 hours between contacts with any WARC station. Silver and Gold certificate holders will give signal reports on request. Fee - nil.

Gold Upgrade for City of Wagga Award

The City of Wagga Basic and Silver awards must have been applied for, and received. For the Gold upgrade an additional 100 points is required. A holder of the Silver award is worth one point towards the Basic, Silver, and Gold upgrade. A holder of the Gold award is worth two points towards the Basic, Silver, and Gold award. Club stations can be worked every 24 hours. When applying for upgrades, a station which has been worked as a silver or gold certificate holder, and is not a member of WARC, his or her certificate number must accompany any application for additional points (I suggest that getting up on the Net may further clarify this last point!).

City of Wagga 360 Upgrade

You are most welcome to work for our final award. In addition to receiving a

certificate, you also receive an attractive lapel badge depicting the City of Wagga Wagga coat of arms. A total of 360 points is needed for the upgrade, comprising 10 contacts with VK2WG/P at one point each, 30 contacts with Club members at one point each, 20 contacts with holders of Silver upgrades at one point each, and 150 contacts with Gold upgrades at two points each.

In all, a total of 360 points. The fee for this award is \$7.00, to defray the costs for the certificate and the lapel badge.

This looks like an enterprising package for the 80 metre buffs, and may bring about some much needed activity. Personally, I would like to have seen some Certificate blanks marked as samples, as publication of these samples further enhances the award.

Croatian Telephony Group Awards

From the Croatian Telephony Group (9A-CW-G) comes news of two new awards, the 9A-CW-G Membership Award and the W-9A-CW-G-M Award.

The following are the rules for membership in 9A-CW-G.

Membership in 9A-CW-G is offered to licensed operators worldwide who are active on at least two amateur bands, using CW mode. They have to be capable of sending and receiving 30 wpm utilising a high standard as operators in technique and clarity and amateur goodwill, without the use of computers, decoders, keyboards, or other helping devices. A test QSO should be of at least 30 minutes duration.

Operators are required to obtain four proposals for membership in 9A-CW-G from 9A-CW-G members, one of which must be from Croatia. A fee of \$US5.00 or 7 DEM or 10 IRCs must accompany the application, and is for life. Each new member will receive a membership diploma and number.

Worked 9A-CW-G members Award (W-9ACWG-M)

For this award, operators need to have two-way contacts with 9A-CW-G members after 1 May 1995, as follows: 9A amateurs, 10 contacts; EU amateurs,

six contacts; and amateurs outside EU, three contacts

An application in the form of a GCR list verified by one other licensed amateur with fees as mentioned above should be sent to: Mato Samardzic 9A3SM, Jure Kastelanac 20, 10000 Zagreb, Republic of Croatia.

This address applies to both awards.

The members of 9A-CW-G are 9A2AJ, 9A2EU, 9A2NK, 9A2VB, 9A2WJ, 9A3PA, 9A3SM, 9A3UT, 9A5I (ex 9A2OB), 9A7AA, 9A7V (ex 9A3ER), 9A7W, 9A8A (ex 9A2VC/9A8AA), DL2QH, DL4FDM, HA3NU, I7ALE, K1RH, K9QVB, OH4YR, OK1RR, PY1BVY, RA6AR and Z32KV, along with recent new members BV2TA, S51M, S58MU, ON5ME, and 9A3A/5B4ADA.

This information came in a letter from Daki 9A2WJ, President of 9A-CW-G, dated 12 July 1996.

RSGB IOTA Awards Program

Following is a news release from the Radio Society of Great Britain.

The RSGB is very supportive of the Islands on the Air (IOTA) program, and has been most impressed to observe its growth in recent years. The Society wishes to give full recognition to IOTA and to establish, in due course, a new IOTA Committee as a Full Committee of the Society. The recent growth of IOTA has been very significant and is undoubtedly placing unreasonable demands on those involved in the administration of the program. The Society will in future, therefore, handle all administration. This will free up members of the new IOTA committee to concentrate on strategic and technical matters.

In order to facilitate this move we have decided to disband the existing IOTA committee. This committee is, in fact, a working group, and is a sub-committee of the Society's HF Committee.

An IOTA Transition Group (IOTATG) under the joint chairmanship of Martin Atherton G3ZAY, and the Society's general Manager, Peter Kirby G0TWW, is to manage the transfer of the IOTA administration to the Society's headquarters. Mrs Eva Telenius-Lowe has been appointed HQ IOTA Co-ordinator.

The Society is most grateful to all members of the IOTA Committee for

their past support and contribution, especially Roger Ballister G3KMA, whose unstinting hard work and enthusiasm over the past 11 years is much responsible for the growth and popularity of the program world-wide. The Society is delighted that Roger has accepted the position of RSGB IOTA Manager, and will continue to manage the program on a day-to-day basis alongside the HQ IOTA co-ordinator and the IOTA Committee.

As a result of the action of the Society, the future of the RSGB IOTA program is now assured. The Society is confident that the program will continue to grow in popularity and to take its place as one of the leading amateur radio awards in the world.

All future correspondence and enquiries regarding the IOTA program should be directed to: RSGB IOTA Program, PO Box 9, Potters Bar, Herts EN6 3RH, England.

The IOTA Awards program was created in 1964 by the late Geoff Watts, a leading British short-wave listener. It was taken over by RSGB volunteers at Geoff Watt's request in 1985. Since then, it has grown enormously, with well over 8000 IOTA Directory holders worldwide and an estimated 20,000 amateurs actively pursuing IOTA contacts.

Special Event Station VK7WBF

John W Bates, Secretary of the WIA Tasmanian Division, Southern Branch, advises of a special event station, VK7WBF, which will be set up dockside in Hobart during the Australian Wooden Boat Festival. All amateur HF, VHF and UHF bands will be covered using phone and CW only from 0800 UTC on Monday, 11 November to 1200 UTC on Sunday, 17 November 1996.

One contact with VK7WBF is all that is required to qualify for the issue of a certificate, which will cost \$AUS5.00. Monies are payable by either cheque or money order in Australian currency made out to the WIA, Tasmanian Division. Application should be made to: Awards Manager, GPO Box 371D, Hobart TAS 7001.

It is envisaged that this event will be a bi-annual event with this year being the inaugural year.

*PO Box 2175 Caulfield Junction
3161

■

Club Corner

Summerland Amateur Radio Club

A bigger-than-ever Grand Computer EXPO is planned for 30 November and 1 December 1996 at the Lismore City Hall. Two days, this time, by popular demand!

All the latest in computer technology will be there, plus other electronics and communications displays. Most of the region's leading suppliers will be represented at this EXPO. Come and see the Internet in action and try it out yourself!

"Bring and Buy" tables will be available for pre-loved gear. Refreshments will be on sale both days. Several lucky door prizes will be drawn over the period.

The doors will be open from 9.30 am to 4.30 pm both days. Admission will be \$3.00, or \$5.00 per family.

Check the club BBS, VK2SRC-2 via

VK2RPL-1 668900 for more information, or phone/fax John VK2JWA on 066 215217.

Graeme VK2GJ
Publicity Officer

Radio Amateurs Old Timers Club

Members are asked to note that VKs 1, 2, 3 and 7 will be on Daylight Saving Time in November, December, February and March (no broadcast in January).

The 20 metre transmissions to the north and west will remain at 0100 and 0200 UTC respectively.

We regret to report the passing of Fred House VK3ARK on Saturday, 28 September. Fred was an early member of the Club and its committee, and also one of our broadcast operators a few years ago.

Allan Doble VK3AMD
ar

Contests

Peter Nesbit VK3APN - Federal Contest Coordinator*

Contest Calendar November 96 - January 97

Nov 1-7	HA QRP Contest	(Oct 96)
Nov 9	ALARA Contest	(Oct 96)
Nov 9-10	WAE RTTY DX Contest	(Jul 96)
Nov 9-10	OK-DX CW Contest	(Oct 96)
Nov 16-17	IARU Region 1 160 m Contest	(Oct 96)
Nov 23-24	CQ World-Wide DX CW Contest	(Sep 96)
Dec 6-8	ARRL 160 m Contest	
Dec 14-15	ARRL 10 m Contest	
Dec 21-22	Croatian CW Contest	
Dec 26 - Jan 26	Ross Hull VHF/UHF Contest	
Dec 29	RAC Canada Winter Contest	
Dec 31	ARRL Straight Key Night	
Jan 11-12	VHF/UHF Field Day Contest	
Jan 11-12	HA DX CW Contest	
Jan 24-26	CQ WW 160 m DX Contest	

In recent times, several new contests have appeared, in which stations calling CQ must change frequency by a certain minimum amount after each QSO, making the frequency available to other stations. The idea is to prevent anyone "owning" a frequency, and to liven things up by forcing everyone to move around. For various reasons, most of these contests have been of little relevance to us VKs, which is why I haven't published details of them to date. However, I recently received a letter from Peter Parker VK1PK on this very issue,

which provides food for thought. See what you think.

Peter writes: "Having participated in many WIA contests, I wonder why more people don't participate in them. At the same time one wonders about the operating manners of some participants, and whether the rules are as fair as they might be."

"After considerable thought, I've come to the conclusion that current operating practices (although perfectly in order) are contributing to falling participation, and the occasional squabble over frequency



The winner of the BERU Challenge Trophy in the 1996 Commonwealth Contest, John VE3EA.

"ownership". The purpose of this letter is to suggest a way to make scores more proportional to effort, and to improve behaviour. Essentially the suggested reforms do away with frequency ownership.

"Firstly, it is useful to look at the different sorts of amateurs operating during a contest. We have what I call the Group 1 or "Hard Core Contesters", who take their contesting very seriously. They may be single or multioperator stations, and are highly likely to send in a log. They usually run the legal limit to good antennas, and can be recognised by their tendency to remain on a particular frequency, and still be there several hours later.

"Then we have the Group 2 or "Casual Contesters", who tend to run more modest stations. Although they might limit their operating time somewhat, the time and effort they put in is not inconsiderable. They are a widely mixed group, and may include QRP operators, new contesters, and those helping out others with QSOs. They are likely to submit a log, and are usually the largest single group participating in a contest. Their participation holds the key to the success of a contest. Group 2 contesters gain most of their contacts by tuning around the band, and responding to the CQs of other stations, who are often Group 1. For this reason, many Group 2 stations never exchange numbers with other group 2 stations, even though they could easily do so if they were able to.

"Group 3 or "Non-Contesters who Give Numbers" are those who say they are not in the contest, but will give a number if asked. Many are old timers who have "been there and done that", and are unlikely to submit a log. Some will be newcomers who are unsure about contesting or aren't familiar with the rules. Most of their QSOs are with Group 1 contesters, and very few with Group 2.

"Group 4 or "Non-Contesters who Don't Give Numbers". The only number they give is 73, so enough said!

"In a contest, a station calling CQ works others who tune on to him or her. When the QSO is finished, normal etiquette is for the calling station to QSY, and the original station to remain on the frequency. Stations with the strongest signals (ie Group 1 contesters) are very likely to operate in this manner, because it usually results in the highest possible QSO rate. In particular, these stations have the advantage of being called by the Group 2 and Group 3 contesters.

"The current convention therefore favours the "big guns". The Group 2 and 3 contesters are essentially cannon fodder for them; however, those same Group 2 and 3 contesters will have much less opportunity to make calls and work each other, especially in the middle, most-used portions of the band.

"Often, when a Group 2 station replies to a Group 1 station, there are many others on the frequency who would like also to work

the Group 2 station, but can't because normal convention says the Group 2 station must QSY after the QSO. After they QSY, they can be difficult or impossible to find again.

"What I am suggesting is a partial abandonment of the current custom of frequency ownership, as it applies to contests. I propose that contest rules be amended to prohibit any station having more than (say) five consecutive QSOs on the one frequency. After that they must QSY, by at least 5 kHz on SSB, and 2 kHz on CW (with exemptions for those using crystal control). This would enable Group 2 and 3 stations to contact each other much more easily, and remove the incentive to try and steal other stations' frequencies, which can easily lead to conflict. By helping the more casual operators, who provide the bulk of contest activity, scores would be more closely related to effort, and many more contacts would result. This would encourage participation, and help stem the long-term decline in HF contest activity in Australia."

Peter makes some very interesting points, and I'm sure most of us recognise the situation he describes. As a Group 2 contester myself, many are the times I have heard other Group 2 stations, whom I have urgently needed for multipliers or just plain QSO points. I've tried every trick in the book to catch them, including calling them in unison with the Group 1's transmissions (to escape mutual interference), calling them a bit low, a bit high, way off frequency, or trying to time my CQ so they would be tuning past at just the right moment. It almost never works, however, and by the end of each contest I usually have several pages of call signs of missed stations, and have spent far too much time on this wasted effort. There must be a better way.

The notion of having to regularly QSY during a contest will be quaint, appealing or anathema, depending on your viewpoint. It is not without its problems; for instance, how would such a scheme be policed? What if someone "accidentally" forgets to QSY at 3.30 am, after filling his quota, when he is the only local station on the band? What if he is being called by several weak Europeans and an African, whose multipliers he needs; does he abandon them? I don't mean to sound negative, however, these very real types of problem need to be solved, for the scheme to work.

What are your views? What WIA or other contests do you see as being suited to such a scheme? Please send any ideas via letter, or e-mail. I'll look forward to hearing from you.

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***STORES IN RED ARE OPEN SUNDAY**

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Barry VK2BJ led the VK contestants and came in fifth place in the 1996 Commonwealth contest.

month, many thanks to VK1PK, VK3KWA, VK3ZC, VK4EFX, I2UIY, OZ1FTE, VE2ZP, 9A2EU, RSGB, and ARRL. Until next month, good contesting!

73s, Peter VK3APN

ARRL 160 m DX CW Contest

6-8 December, 2200z Friday to 1600z Sunday

The object in this contest is to work as many W/Ve stations on 160 m CW as possible. Categories are: Single Operator (QRP to 5 W, Low Power to 150 W, and High Power above 150 W O/P), and Multioperator single Tx. Exchange RST, W/Ve stations will add their ARRL/CRRL Section /MM and /AM stations should add ITU region 1, 2 or 3 as applicable. 1830-1850 kHz is recommended for intercontinental QSOs.

Score five points per QSO. The multiplier is the total number of ARRL/CRRL sections plus VE8/VY1 worked (max 77), and the final score equals QSO points X multiplier. Logs on MS-DOS disk are welcome. Send logs postmarked no later than 30 days after the end of the contest to: "ARRL Contest Branch, 225 Main Street, Newington, Connecticut, CT 06111". Logs can also go to the ARRL BBS at 203-665-0090, or via the Internet at contest@arrl.org. Certificates will be awarded to the top scoring station in each category, in each DXCC country. Note that the use of non-amateur radio means of communication during the contest (eg telephone) is not allowed for the purpose of soliciting QSOs.

ARRL 10 m Contest (CW & Phone)

14-15 December, 0000z Saturday to 2400z Sunday

This popular ARRL contest runs on the second full weekend of December each year. The object is to work as many stations worldwide as possible on 10 m phone, CW, or mixed. Maximum operating period is 36 hours, and listening time counts as operating time. Categories are as for the 160 m contest (see above). Send RS(T) plus serial number, W/Ve will send RS(T) plus state or province. CW entrants should stay below 28.3 MHz, avoiding beacon frequencies. Stations entering the mixed mode section may work stations once on CW and once on phone.

Score two points per phone QSO, four points per two-way CW QSO, and eight points for CW QSOs with US novice or technician stations signing /N or /T (28.1-28.3 MHz only). Multipliers are the 50 US states plus District of Columbia (DC), plus Canadian provinces (see below), plus DXCC countries except US and Canada, plus ITU Regions (/MM & /AM QSOs only). Multipliers are counted separately on each mode. Final score is total QSO points x total multiplier. Include a dupe sheet for 500+ QSOs. Logs should be sent as for the 160 m Contest (see above).

Croatian CW Contest

21-22 December, 1400z Saturday to 1400z Sunday

This new contest is open to stations worldwide. Sections are single operator all

band, and multioperator all band. Use 160-10 m, CW only, and exchange RST plus ITU zone.

For each valid QSO with a 9A station, claim 10 points per QSO on 160/80/40, and six points on 20/15/10. For QSOs with other continents, claim six points on 160/80/40, and three points on 20/15/10. For QSOs with own continent, including own country, claim two points on 160/80/40, and one point on 20/15/10.

Multipliers are the number of DXCC/WAE countries on each band, and the final score equals the total QSO points x the total multiplier from all bands. Forward your log, summary and dupe sheets within 30 days to: "Hrvatski Radio Amaterski Savez, Dalmatinska 12, 10000 Zagreb, Croatia". Logs on 3.5" disk are also welcome.

Canada Winter Contest

29 December, 0000z to 2359z Sunday

This popular contest should appeal to expatriate amateurs living in Australia. Canada of which, I am assured by the contest manager VE2ZP, there are many. If you are one of them you must therefore enter, or risk losing your "preferred citizen" status (now I've kept my promise to VE2ZP to harangue you to enter!).

You can work any other station for contest credit, on either CW or phone, 160-2 m. You can enter as single operator single band, all band, or all band low power (100 W O/P); or multioperator. On CW try 25 kHz up on the half hour, and on phone 1850, 3775, 7075, 7225, 14175, 21250 and 28500 kHz. Send RS(T) plus serial number; Canadians will send RS(T) plus province. (VE0 will send RS(T) plus serial).

Score 10 points for each QSO with a Canadian station including VE0, and two points for each non-Canadian QSO. QSOs with official Canadian RAC stations (RAC suffix) are worth 20 points. Note that CW and phone QSOs must be made in the appropriate sub-band to be valid. Multipliers are the ten Canadian provinces and two territories, and are counted once per band and mode (ie 12 on 160 m SSB, 12 on 160 m CW, 12 on 80 m SSB, etc). Multipliers are listed below. Final score equals total points x total multiplier. Send logs to: "RAC, 614 Norris Court - Unit 6, Kingston, Ontario, K7P 2R9, Canada" by 31 January 1997.

Canadian Provinces & Territories

- NS Nova Scotia (VE1, CY9, CY0)
- PQ Principality of Quebec (VE2, VA2)
- ON Ontario (VE3, VA3)
- MB Manitoba (VE4)
- SK Saskatchewan (VE5)
- AB Alberta (VE6)
- BC British Columbia (VE7)

NT North West Territories (VE8)
 NB New Brunswick (VE9)
 NF Newfoundland & Labrador
 (VO1, VO2)
 YU Yukon (VY1)
 PE Prince Edward Island (VY2)

Results of 1996 Jack Files Memorial Contest

Presented by Peter, VK4EFX

** = trophy, * = certificate

CW, Single Operator Home:

VK4ICU * 455

VK4OD * 264

SSB, Single Operator Home:

VK4PCB ** 3973

VK4PIK * 2134

VK4ICU * 792

SSB, Single Operator Mobile/Portable:

VK4KEL * 160

SSB, Club Mobile/Port:

VK4BAR ** 2295

DX:

ZL1BVK * 1710

SWL:

Ian McGovern (Parkes NSW) * 2136

Highest Novice Score:

VK4PCB ** 3973

Check Logs: VK4PVH VK4LAA

Results of 1996 SAC DX Contest

The plaque for the top Oceania score went to VK2APK, in both the CW and SSB sections. The following results show the callsign, QSOs, QSO pts, Mult, and Final Score:

CW:

VK2APK* 112 211 46 9706

VK2ZC 40 58 23 1334

VK4TT 44 44 18 792

SSB:

VK2APK* 53 69 28 1932

VK2XT 50 50 33 1650

VK3TI 23 69 12 828

Results of the 1996 Commonwealth Contest

By Harold G2HLU & Bob G3PJT, with editing and further comments by John VK3ZC

One thing is certain: BERU is never the same two years running! But all entrants profess to enjoy it, whatever the vagaries of propagation. VE3IY/7 echoed many comments: "Delighted to work so many familiar calls"

The winner of the BERU Challenge Trophy is John VE3EJ, with his fifth win. John exploited his excellent 80 m antennas to the fullest, with a clear lead on 80 m over ZF1JT. Second was ZF1JT in the Cayman

Islands (Bob G3PJT), and Nigel 6Y5HN was third once again. Barry VK2BJ led VK in fifth place, closely tailed by John VK4EMM in sixth place. Special thanks to Russ VK4XA for operating HQ station VK4WIA, and helping so many others with valuable bonus points.

One hundred and two logs were received, the same as last year. There were 375 Gs active, 126 VE, 82 VK and 37 ZL. VK stations had the highest log submission rate,

at 26%. A total of 55 call areas were represented, many of them on the LF bands. Only one year remains in which VR2/VS6 will be in the Commonwealth.

Twenty logs came on disk, and three via the Internet. Eight were typed and 49 handwritten, the latter ranging from impeccable to very scruffy. About half the entries were accompanied by dupe sheets and bonus lists.

*PO Box 2175 Caulfield Junction, VIC 3175

pnesb@multix.org.au

ar

1996 Commonwealth Contest Results

Posn	Call	80	40	20	15	10	Total
Top Ten:							
1 ###	VE3EJ	1198	1789	1802	623	25	5437
2 ##	ZF1JT	846	1801	1660	593	—	4898
3 *	6Y5HN	733	1323	1649	485	25	4221
4 #	G4BUO	789	961	1594	675	125	4144
5 *	VK2BJ	645	1615	1219	365	—	3844
6 *	VK4EMM	667	1427	1048	318	—	3460
7	G0IVZ	708	1116	1126	444	50	3444
8 *	VE3IY/7	479	856	1763	198	—	3296
9 *	9J2BO	240	640	1362	573	309	3124
10	GM3POI	591	913	1326	175	25	3030

VK:

22 *	VK3ZC	406	983	525	—	—	1914
30	VK4XW	396	678	458	23	—	1555
32	VK2BQQ	355	976	193	—	—	1524
40	VK4OD	366	497	440	46	—	1349
44 *	VK7BC	415	500	343	—	—	1258
45	VK3XB	175	495	535	—	—	1201
46	VK2DID	150	616	415	—	—	1181
48 *	VK8HA	—	428	633	94	—	1155
51	VK4IV	25	569	449	—	—	1043
73 *	VK5HO	281	269	—	—	—	550
74	VK3KS	—	194	303	—	—	497
79	VK3IY	271	100	—	—	—	371
82	VK3AMD	—	196	—	—	—	196
84	VK3AZT	—	98	50	25	—	173

Single-Band VK:

7MHz

1 *	VK2APK	—	1852	—	—	—	1852
2	VK6VZ	—	1582	—	—	—	1582
3	VK2ETM	—	821	—	—	—	821
4	VK3APN	—	794	—	—	—	794

14MHz

4	VK4TT	—	—	858	—	—	858
5	VK6AJ	—	—	653	—	—	653

Senior Rose Bowl; ## Junior Rose Bowl; # Col. Thomas Rose Bowl, * Certificate winner.

Checklogs: G0AEC, G3BPM, G3WP, GB5CC (G3NKC), VE7/GM3CX, VK2EL, VK4WIA (VK4XA).

Divisional Notes

Forward Bias - VK1 Notes

Peter Parker VK1PK

Technical Symposium Soon

This month's VK1 Technical Symposium promises to be better value than ever. Event organiser Mike VK1KCK advises that this year's event will be held at the Charnwood Scout Hall, Tillyard Drive, Charnwood. Attendees can register from 9 am, with sessions starting at 9.30 am. As previously reported, it is being held on Saturday, November 23.

Apart from a comprehensive program of presentations and demonstrations, covering many aspects of amateur radio, other attractions have been planned. These include Daycom Communications Pty Ltd establishing a technical book display, and an opportunity to measure the performance of your radio equipment.

Presentations planned for the Symposium include TCP/IP addressing, HF receiver design, spread spectrum techniques, future trends in modulation, Radiosport, complex arithmetic for the amateur, TCP/IP protocols, PACTOR operating, communication for the ACT Car Rally, and setting up a packet radio TNC.

It will cost \$25 to attend the Symposium. For this you will get a copy of the proceedings, morning and afternoon tea, plus a light lunch. For further information, or to book your place, please contact Mike VK1KCK on telephone (06) 292 0053, or by packet radio to VK1KCK @ VK1BBS.

Division Receives French Antenna

Graham VK1KGT reports that the VK1 Division has been donated a log periodic antenna, rotator and tower. The gift, organised by Greg VK1GPC, is courtesy of the French Embassy. The Division took possession of the equipment on Saturday, 31 August. Jack VK1JA, Phil VK1PJ, Tex VK1TX and Graham VK1KGT assisted in the tower and antenna removal. The Division thanks the French Embassy for its generosity.

1997 Callbooks

Our Federal Councillor, Richard VK1RJ, advises that 1997 WIA Callbooks will be coming out later this month. Subject to demand, he will be ordering a batch for sale to local amateurs. The normal price will be \$14.95, though WIA members will receive a ten percent discount.

If you're interested in obtaining a copy of this year's VK Callbook, please let Richard know. He can be contacted via packet (VK1RJ @ VK1BBS), or on telephone (06) 258 1228 (ah).

Triband Yagi Raffle

Members are continuing to support the Division's Chimside triband Yagi raffle, with many tickets being sold. The raffle, which will be drawn at this month's meeting, is the biggest that the Division has held for some time.

Tickets cost just a dollar each for your chance to win the antenna. However, if you pay five dollars, you get six tickets for the price of five. For more details on ticket availability, please contact Phil VK1PJ on 292 3260.

Your Chance to Beat Fee Rise

VK1 amateurs are being given the chance to beat next year's rise in WIA subscriptions. September's committee meeting heard that the Federal component of our subscriptions will go up by \$2.00 next year. The VK1 Committee has decided to hold the Divisional portion at this year's level. This means that the Federal \$2.00 increase will be passed on to members. Even after the increase, full WIA membership with the magazine will cost less than 20 cents per day. In addition, VK1 members will continue to pay less than amateurs in some other states.

However, by joining the VK1 Division before the end of this year, you can beat the increase. Our current subscriptions are \$70 full membership, \$56 for concession holders, and \$42 for membership without the magazine. Three year memberships are treble the above figures; the advantage here is that you are protected from any future subscription increases until 1999.

If you're interested in joining Australia's most progressive WIA Division, give our membership secretary a call. He is Hugh Blemings VK1YYZ, and can be telephoned on 254 7855 (ah).

VK2 Notes

Richard Murnane VK2SKY

Broadcast Volunteers Needed

As the old saying (almost) goes, "many hands make light the reading ...". As is usually the case in volunteer organisations, there are never enough volunteers to go around. At present, we have a shortage on the evening broadcast team; so, if you've

been thinking the time for your 15 minutes of fame is overdue, this could be the big break you've been waiting for!

We need both engineers and announcers, so even if you are a bit shy about broadcasting your voice on nearly every amateur band from DC to daylight, you can still be an effective member of the team, running the technical side of the Dural station.

The commitment required is typically one broadcast every two or three months; you can run the morning or the evening broadcast, though at present the greater need is for the evening team!

You don't even need to have an amateur licence (tell your SWL friends!), as a full call amateur is always rostered on at the station. In any case, full training is provided to all broadcast volunteers.

If you would like to have a go, please contact Pixie VK2KPC at the Divisional office, (02) 9689 2417, between 1030 and 1530 hours Monday to Friday, or leave a message at any other time.

Looking forward to meeting you at the station!

Thought for the month:

Yesterday is history. Tomorrow is a mystery. And today? Today is a gift. That's why we call it The Present.

Babatunde Olatunji

VK3 Notes

Jim Linton VK3PC

Half Way Mark

To some of us it just seems like yesterday that the 1996/97 Council was elected, but in fact the Annual General Meeting was held six months ago. A mid-term review of Council's performance reveals it has addressed the matters arising out of the AGM, and kept members informed or progress through reports via this column. The monthly VK3BWI voice broadcast, and VK3WI packet news bulletins

The most time-consuming of AGM initiated activities has been the updating of the Memorandum and Articles of Association. A draft copy of this document was made available last month through the mail to members requesting it. Any member wanting a copy should send a manilla envelope 24 cm x 16 cm, self addressed, with an 85 cent stamp affixed, to the Secretary. Comments and input on the draft document can be made in writing up until 30 November 1996. A further revision in consultation with our solicitors is to be put to a Special General Meeting early next year, the date and venue of which will be advised to members.

Membership Renewal

Most WIA Victoria members have their annual membership renewal due at this time of the year. The 1997 membership subscription rates were expected to be finalised a couple of weeks after the deadline for these notes. These will be in the December edition of VK3 Notes, along with other important information including the Christmas-New Year arrangements for the WIA Victoria Office and the VK3BWI broadcast.

New Callbook

The 1997 Australian Radio Amateur Call Book published by the WIA has a \$14.95 cover price. Check with the WIA Victoria Bookshop for the special members discount rate, and the mail order postage and packaging costs. These details could not be finalised until initial supplies of the call book were on hand to enable an accurate check of its weight and postage rates. The member over-the-counter and mail order costs will be in next month's column.

QSL Bureaux

WIA Victoria continues to provide one of the most efficient QSL bureau services, and there's been an influx of new registered users. To use either the inwards or outwards bureau you must be a member, and also a registered bureau user. Information sheets on how the service operates, its user requirements, and registration forms are available on request.

VK6 Notes

John R Morgan VK6NT

Divisional GM

There was a better-than-usual attendance at the September GM, with 34 members enjoying a talk by Trish VK6QL concerning her son's much-publicised single-handed around-the-world voyage.

General Meetings are held on the third Tuesday of each month in the Board Room, 3rd Floor, CWA House, 1174 Hay Street, West Perth, commencing at 8 pm. There is no meeting in December. All interested persons (members and non-members, licensed or listener) are invited to attend, and will be plied with free coffee and biscuits.

ALARAMeet - Perth 96

Officially held on the week-end of 27-28 September, the Meet started (unofficially) a few days early, with a lunch on the previous Thursday, and dinner on the Friday. These events were attended by those who had already arrived in Perth, together with quite a few VK6s.

The ALARA Meets are held every three years, at various locations around Australia, and are a mixture of old friends re-uniting and everyone getting to know new friends. There were 47 VKs present (from every state and territory except VK8), and many overseas members: Raija SM0HNV from Sweden, Aimee FK8FA and Michel FK8GO from New Caledonia, and Elizabeth VE7YL from Canada, and 20 ZLs.

While the venue for much of the Meet was The White House restaurant complex in Ferndale, there were numerous excursions, including a visit to Kings Park to see the wildflowers, and a ferry-ride from Perth to the Fremantle Markets. After the week-end was over, many of the visitors continued with trips to the Mundaring Weir reservoir, which is full for the first time in about 25 years, and to Rottnest Island, 20 km off the coast.

All those involved wish to thank the organiser, Bev VK6DE, and her able helpers, including Poppy VK6YF, Joan VK6JMP, and Fiona (when are we going to see a callsign, Fiona? - 6NT) and photographer/guide Jeff VK6JKR. A great time was had by all.

Thanks to Tina VK5TMC for providing the above information.

WAADCA

The AGM of the Western Australian Amateur Digital Communications Association Inc (known as WAADCA, pronounced wad-kah), which is affiliated to the VK6 Division of the WIA, was held on Wednesday, 2 October 1996. The following volunteers were elected to serve on the committee: President, Phil Maley VK6AD; Vice President, Gwynne Brocks VK6AJG; Treasurer, Charlie King VK6ZCK; Broadcast Officer, Terry Leitch VK6ZLT; and Repeater/Equipment Officer, Rob Lamb VK6VP.

Phil VK6AD reports that, at the November GM, the first in a series of five training sessions on packet radio was presented. These sessions are designed to start at "raw beginner" level. Those who attend can expect to become proficient in the use of their TNC or Baycom modem, typical packet terminal software, and their local BBS. They can also expect to gain some insight into other protocols, such as TCP/IP. The next session will be presented at the February AGM.

WAADCA meets at 8 pm on the first Wednesday of each month, in the Meeting Room of the Wireless Hill Telecommunications Museum, Ardross. As always, non-members are welcome to attend.

In order to reduce the congestion on what has become a very popular packet radio

frequency of 144.725 MHz, the club recently purchased a pair of Tekk transceivers, in order to implement a dedicated 9600 baud UHF link between its BBS (VK6WFFH) and Gateway station (VK6DLX). The latter is located at the site of "radio friendly" InterNet provider Dialix.

You are invited to take a look at WAADCA's InterNet web page at <http://www.waadca.asn.au>, and to offer ideas and suggestions concerning its content. Contact Phil VK6AD, either via e-mail to pmaley@ozemail.com.au, or via packet radio to VK6AD@VK6WFFH.

If You Have Material ...

Material for inclusion in this column may be sent to VK6NT @ VK6ZSE.#PER.#WA. AUS.OC, or to PO Box 169, Kalamunda WA 6076, or via telephone on (09) 291-8275

"QRM" News from the Tasmanian Division

Robin L Harwood VK7RH

The year is rapidly drawing to a close and now that the weather has improved, several outdoor activities will be held. For example, the annual "Sewing Circle Barbecue" is scheduled for mid-November. "The Sewing Circle" is the name of a long-standing 80 metre SSB net which has been meeting on 3590 kHz +/- QRM for over 40 years. I came into the Net during the days of Jack Batchelor VK7JB, Bob O'May VK7OM, Lon Jensen VK7LJ, and Crosby Walch VK7CW. Sadly these operators have all passed away yet it was my privilege to work them just when I started out in 1972.

For the past 19 years, the Net has been associated with Bob Jackson VK7NBF and the Sewing Circle has continued meeting daily at 1700 hours Tasmanian time. For details on the Barbecue call in on 3590 and find out.

The Divisional Council met in Hobart on 21 September at the Domain Activity Centre. Among items discussed was the Divisional Insurance Policy, the future of Hobart's Repeater Two, continuing problems with packet BBS forwarding plus reports on activities within the three Branches. Council also received the resignation of the Divisional WICEN co-ordinator, VK7PU. This was accepted reluctantly and we are grateful to Phil for his input in drafting guidelines for future WICEN operations within Tasmania. Our Divisional President VK7GL will be acting co-ordinator for the time being. The next Divisional Council meeting will be held this month and the venue will be given over VK7WI.

The future of VK7RHT on 146.700 MHz, the second FM repeater established in VK7, has been debated of late, after a draft agreement was finally given to the Southern Branch, by the NTA. Although the annual site fee has been scaled down, the installation costs would be still beyond the scope of either the branch or Division as the rules only permit this installation to be done by Telstra. The repeater is presently situated on the old tower, which is scheduled for demolition in late January/early February.

The performance of the repeater has not been satisfactory for some time, because the receiver overloads on the huge amount of RF present on Mount Wellington. This has been a cause of frustration for many who can hear it but cannot get in as the mute is heavily wound on. VK7RAF, a privately maintained repeater on Mount Faulkner on 147.075 MHz, does provide some coverage yet there are blank spots, particularly south of Hobart. The Branch also has been looking at alternative sites for VK7RHT and the

possibility of having several remote receiving sites linked to the mountain. A general meeting was arranged to discuss the options regarding the repeater's future on 9 October but, as this is being written prior to this, I will be reporting the result in the December issue.

The Southern Branch went to the Antarctic Division at Kingston on 2 October instead of having their monthly meeting at the Activity Centre. The Northern Branch, which is now meeting at the Alanvale campus of Launceston TAFE, had a speaker from the Telstra National Communications Team. The topic was "Communications into the 21st Century". The Branch is grateful to Telstra for making this presentation.

Meetings for the month of November are: South - Wednesday, 6 November at 2000 hours EDT, Domain Activity Centre; Northwest - Tuesday, 11 November at 1945 hours EDT, Penguin High School; Northern - Wednesday, 12 November at 1930 hours EDT, Launceston TAFE Block "C".

or

amateur friend in Germany and tell him that you are talking to him from the middle of the Australian "outback". He does not believe you!

The contact station for the Flying Doctor Service is attached to the General Store. To my question of how often did they use their radio for emergencies, the reply was: "Only three times during the past 12 months. Since the arrival of the Telstra towers, we use the phone; it is more convenient".

Times have changed since the "Flynn of the Inland" era, but the beauty and challenge of the outback remain the same. Go and see it for yourself, before it is too late.

Macquarie Island - VK0WH

Warren VK0WH has not been very active since 19 August. He has indicated to his friends that, after August, he had to curtail his radio amateur activities as the re-supply boat arrived on 25 August bringing in a new group of scientists to the Island. Early in September Warren sent a number of e-mail messages to USA and German amateurs which made his position clear. "I am busy helping a boat-load of scientists with IBM net-working problems, so I am not really in a position to get on (the bands) at the moment. Due to my greatly increased workload at present it is unlikely that I will be able to get on very much now and, as the old RACAL transmitter now has an ATU fault, it is not worth spending time on it, as I am about to decommission it in a few weeks time anyway. I will have to declare QRT on CW Amateur radio for me was a last minute thing and my original intention was only a weekly sked with a couple of friends and not any DX, hence me not bringing in any equipment. I have made 1200 QSOs with about 50 DXCC countries. A modest figure but at least 1200 people got the country they wanted. I leave on the next ship so any mail should now go to my home address."

Warren also said: "I hear via the grapevine that one of the 'met' guys coming in, will operate amateur radio and may be more into DX than I was; so those who missed me, will get another chance."

Rumour has it that the "met" (meteorology) person is Graham VK5WG who was on Willis from December 95 to June 1996. Let's hope that Graham will be more active than he was on Willis. In the first four months of his stay on Willis, he made only a dozen or so QSOs and, after a number of contacts in April and May, his work commitments did not allow for more activity (see June 1996 *Amateur Radio*). It is hoped that Graham will use the callsign VK0WH and will be at least as active as Warren was.

LATE NEWS: Quite unexpectedly I had a new and longer contact with Warren on 29

How's DX

Stephen Pall VK2PS*

In between writing my monthly column for the October and November issues of this magazine, I organised my time in such a way that I was able to get away from amateur radio, DXing and column writing for two weeks.

"Get away" is the proper expression to use, as I was travelling with a small group of people in two four wheel drive mini-buses into the middle of our vast country; to places of which I had heard but never seen. Here's just a few names to whet your appetite: Tiboburra, Camerons Corner, Strzelecki Track, Innamincka, Birdsville, Birdsville Track, Flinders Ranges, Broken Hill, Menindee Lakes, Lake Mungo, and the Mid-Western Highway back to Sydney.

We had a marvellous two weeks, travelled 6000 kilometres and experienced rolling sand dunes, deep tracks, "greening" deserts (the result of the April-May rains in Queensland), some creek beds with water in them, the flowing of the Cooper and Diamantina in some places, spectacular displays of wildflowers (the best for many years), a multitude of birds and animals (but only one solitary dingo), and the immense flatness of some areas with a 360° circular view and not a tree or bush in sight, only the "gibber" (billions of small, shiny, dark brown, sharp stones as far as the eye can see). This is Central Australia!

Surprisingly, there are people there everywhere. Not only the four wheel drive travellers, but those who choose to earn their living in these remote areas of the land. Communications? Yes, School of the Air is there, and broadband multi-wire antennas everywhere serving the Royal Flying Doctor Service and the outlying stations of the "never-never". But signs of modern technology are also there.

Tall Telstra towers are standing on the edge of the horizon as guardians of the empty landscape with their microwave dishes pointing to the four directions of the compass and with solar cells as the source of power.

In Innamincka there are three buildings and 14 residents. There is the Hotel, the General Store and the Park and Wildlife Offices in the recently restored former Inland Mission hospital building. In front of these buildings there is a large parking area where at 8 am each morning dozens and dozens of four wheel drive vehicles line-up for the opening of the petrol pumps to fill their empty tanks with 98 cents per litre petrol. On the other side of this open area, with the silhouette of a huge Telstra tower on a nearby sand hill, there are two solar-powered public telephone booths. You walk in, put your coins or phonecard into the slot of the apparatus and you dial up your radio

54°30'S

VKØWH

158°57'E

AN-005

MACQUARIE ISLAND

ZONE 30

Warren Hill, 15 Gaillardia Street, Macgregor, QLD 4100, Australia



September at 0050 UTC. Conditions were atrocious, with not another DX station in sight (ie hearing distance), so he was able to verify the above news with some modifications. The total number of QSOs has grown to about 2500 but the number of the DXCC countries remained around 50. Warren leaves Macquarie Island on 25 November after he dismantles the old RACAL transmitter/receiver which was installed in 1972. All the surplus equipment will be taken back to Hobart for disposal. He confirmed that Graham (ex VK9WG) is at present in Hobart undergoing some training and will arrive on 25 November 1996.

Myanmar - XZ

It was not so long ago the amateur world learned that the door to amateur radio in Myanmar was closed (May 96 *Amateur Radio*). However, it seems that persistent lobbying by Kan Mizoguchi JA1BK, Martii Laine OH2BH and Warren Hill KF7AY has produced results with the Myanmar Government. The above delegation of amateurs was in Yangon the capital of Myanmar and has met with Government officials to finalise the licensing and operating arrangements for an upcoming large scale operation to be conducted by members of the Central Arizona DX Association.

As part of that meeting, permission was granted to conduct a limited operation using the callsign XZ1N for several hours each day between 27 and 29 August.

In the middle of September came the big news. A press release issued by Warren Hill KF7AY said, among other things: "The door to amateur radio in the Union of Myanmar has been re-opened! The stage is now set for

a well organised large scale operation by members of the Central Arizona DX Association from 16 to 25 November 1996. This will be an all-mode operation and will even feature a special event station during the official opening ceremonies of "Visit Myanmar Year 1996". Participants to be AB6ZV, AA7WP, JA1BK, K5VT, KCSAYR, N6BT, WA6CDR, KF7AY, N7NG, N7WTU, NZ7E, OH2BH, WA7LNU and WY7K."

This activity has the approval of the Myanmar Government at the highest level and will conclude with a special multi-multi entry in the CQ World Wide CW DX Contest. The crew will operate three Yaesu FT-1000MPs, plus Alpha linears to monoband Yagis at above 80 feet, and various special low band antennas from the New World Inya Lake Hotel on the outskirts of the capital city Yangon (96° 17' East and 16° 78' North) formerly known as Rangoon. The main mode of operation will be CW but there will also be extensive RTTY and SSB activity on the usual DX frequencies.

There will be special emphasis on the low bands by AB6ZV and N6BT and every effort will be made to work the sunrise and/or sunset terminator as it passes through regions where propagation is supported.

A unique aspect of this operation will be that bureau QSLs can be requested in two ways: the usual method, routed as XZ1N via W1XT; or via the Internet by sending e-mail to xz1n@qz.com. For a quicker reply, direct requests with return envelopes and sufficient postage are encouraged and should go to W1XT at PO Box 17108, Fountain Hills, AZ 85269, USA. Because of the time needed to print QSLs, the mailing of the XZ1N cards will begin in late January or early February. Bureau cards will be sent out at least twice

monthly. Propagation to Myanmar during this time of the year may differ significantly on an day-to-day basis. All three stations will simultaneously be on different bands.

Future DX Activity

* Jon EA2KL and Louie EA3ELM will be active from Rodrigues Island (IOTA AF-017) from 31 October to 5 November. QSL via home calls.

* John K4BAI will be active from Barbados as 8P9HT from 15 to 22 November; and during the CQ WW Contest on 23-24 November will use the call 8P9Z. QSL via home call.

* TL8MS is active again from Central Africa. QSL via DL6NW.

* Jorma OH2KI will be active from Gibraltar as ZB2X during the CQ WW CW contest (23-24 Nov). QSL via home call.

* Rolf XV7SW has returned from his holiday in Sweden and is active again from Hanoi.

* JX7DFA on Jan Mayen will be active until April 1997.

* Wally R1ANZ is at the Russian Antarctic Base of Mirny, 66° S and 94° E on the Queen Mary Coast. He will be there until July/August 1997.

* C6-Bahamas. John K3TEJ and Ed WA3WSJ intend to operate in the Bahamas in the CQ WW CW contest, from Abaco Island (IOTA NA-080). QSL via K3TEJ.

* Bill VQ9WM will be in Chagos for at least 10 months. QSL via K7IOO.

* Togo. A large group of amateurs will be active during the coming CQ WW DX Contest with the callsign 5V5A.

* Paul A3SRK has moved to his permanent location on Lifuka Island (IOTA OC-169). QSL via W7TSQ. Paul says that the A35 QSL Bureau is now totally defunct. QSLs to A35 stations to be sent only via QSL Managers.

* Louis VE2BQB is currently active from Iqaluit on Baffin Island (IOTA NA-047) until 15 December using the callsign VE8TA. Baffin Island lies in the much sought after Zone 2. QSL to home call.

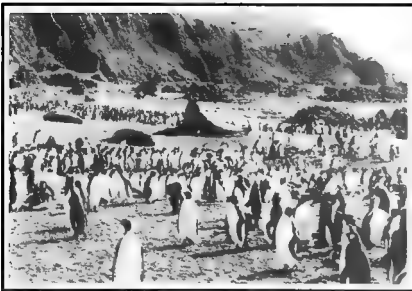
* Fernando EA4BB will be working in Zaïre for the next 12 months. He is operating from Rwanguba with the callsign 9Q5BB. QSL via his home call.

* Father Kevin Burke A35KB returned from a holiday in England and is now living on Eua Island (IOTA OC-049).

* Tony A45ZN is active on 160 and 80 metres at his evening times with 400 watts and a trap dipole.

Interesting QSOs and QSL information

* AH4/AHOW - 10.1 - CW - 0638 - Aug (E). QSL via KE7LZ, Robert W Johnson,



Royal Penguins on Macquarie Island - photo by Warren VK0WH

5627 W Hearn Rd, Glendale, AZ 85306 - 4213, USA.

* 5N0T - Pat - 7041 - SSB - 0655 - Aug (E). QSL via F2YT, Paul Herbet, 9 Rue de L'Alouette, Estree Cauchy, F-62690, Aubigny en Artois, France.

* 9Y4VU - Frank - 14160 - SSB - 0526 - Aug (E). QSL via W3EVW, Roger D Causse, 313 Pontiac St, Lester, PA 19029, USA.

* Y1IAS - Ali - 14250 - SSB - 0559 - Aug (E). QSL via PO Box 55072, Baghdad, Iraq.

* Y1IHK - Haider - 14250 - SSB - 0607 - Aug (E). QSL via PO Box 55072, Baghdad, Iraq.

* CN8BK - Filali - 14250 - SSB - 0646 - Aug (E). QSL via Abderrahmane Filali, 18 Rue de Casablanca, Rabat, Morocco.

* 8R1Z - Len - 14195 - SSB - 0600 - Aug (E). QSL via Lennox Smith, POB 12111, Georgetown, Guyana, South America.

* JT1KAA - Chuluru - 14017 - CW - 0444 - Sept (E). QSL via PO Box 639, Ulan Bator, 13, Mongolia.

* R1ANZ - Wally - 14164 - SSB - 0544 - Sept (E). QSL via UW1ZC, Valentyn Mykitenko, Akademgorodok, 21, 184340 Loparskaya, Russia.

* VR6PAC - Jay - 14246 - SSB - 0505 - Sep (E). QSL to Pitcairn Island Amateur Club, PO Box 73, Pitcairn Island via New Zealand.

* T91EAM - Almir - 14019 CW - 0611 - Sept (E). QSL to Radio Club Nikola Tesla, Oslobođenja bb, Zivnice, Bosnia Herzegovina.

* FT5XL - John - 14164 - SSB - 0623 - Sept (E). QSL via F5NZO, Didier Bruriaud, Le Bourg, Vitry sur Loire, F-71140, Bourbon Lancy, France.

From Here and There and Everywhere

* Brad K7ZSD, in a note sent out with the KC6SD QSL card, apologised for the two year delay. Moving house and establishing a new business were the reasons given for the delay.

* Canadian amateurs are commemorating the 60th anniversary of the Canadian Broadcasting Corporation. From 26 October to 29 December the following special prefixes may be used (regular prefix/special prefix): VA2/XM2, VA3/CJ3, VA7/VX7, VE1/CG1, VE2/C12, VE3/C13, VE4/X14, VE5/XM5, VE6/VA6, VE7/XK7, VE8/CH8, VE9/VB9, VO1/XO3, VO2/CZ6, VY1/CK5 and VY2/XN2.

* Alan VK8AV reported that he worked Martin OH2BH from Myanmar who was using the callsign XZ2BH on 80 and 40 m CW. Incidentally, Martin has a new address: Marti Laine, Nuottamentie 3D 20, 02230 Espoo, Finland.

* KH7 callsigns have been appearing on the bands. These are Hawaiian amateurs issued with the new prefixes.

* The Danish QSL Bureau changed its address to: EDR QSL Bureau, Klokkestoeber Vej 11, DK-5230, Odense M, Denmark.

* To commemorate the transfer of sovereignty of Hong Kong from the United Kingdom to the Peoples Republic of China on 1 July 1997, Hong Kong amateurs are

allowed to change the numeral in their callsign as follows, during 1996, VS96 or VR96; until 30 June 1997, VS97 or VR97; from 1 July to 31 December 1997, VR97, and during all of 1998, VR98

* During the recent activity from Midway, the AH4/AH0W team logged 15,000 QSOs. QSL via KE7LZ.

* The ownership of *The DX Bulletin* and *DX Magazine* has changed hands. As from 23 August 1996, Chod Harris VP2ML, who was the editor owner of the publications for the past 11 years or so, retired and the new publishers are Paul and Nancy Smith, AE4AP and KB4RGW respectively, who already produce the *GOLIST QSL Managers* list and the *DX Reporter*. We wish Paul and Nancy all the best of success in their new venture.

* The UK prefix system has undergone some changes. To help you to identify the various countries here is an update. England: G, GX, M, MX, 2E. Wales: GW, GC, MW, MC, 2W. Scotland: GM, GS, MM, MS, 2M. Northern Ireland: GI, GN, MJ, MN, 2I. Isle of Man: GD, GT, MD, MT, 2D. Jersey: GJ, GH, MJ, MH, 2J. Guernsey: GU, GP, MU, MP, 2U. The M calls were started this year after the G calls were exhausted. The calls starting with the numeral 2 prefix are novice calls. UK Club stations are: MX, MT, MN, MH, MS, MP and MC. GB calls can be anywhere in the UK.

* UK prefixes according to licence types: G, GD, GI, GJ, GM, GU and GW indicate a full licence issued before 1 April 1996: GX, GT, GN, GS, GP and GC indicate Club stations issued before 1 April 1996; and M, MD, MI, MJ, MM, MU and MW indicate full licences issued after 1 April 1996 (at present all M full licences have 0 as the digit). MX, MT, MN, MH, MS, MP and MC indicate club stations issued after 1 April 1996, and GB indicates special event stations. A one by one call may be used in major contests. At present these are in the G6 and M6 series. The digit indicates the year so, in 1997, it will change to 7.

* Paul 11RBJ, famous for his past "Seborga" activities, is now active as LX2AA. He has a new address in Luxembourg and is not using his 11RBJ callbook address.

* Jack K7EHI is no longer the QSL manager for T32AF, T30A, T30BC and T32BC. Henry, the operator for T30A, T30BC and T32BC, has been a silent key since July 1993.

* Carl WB4ZNH reports that he has spoken to the Director General of Communications in Sana'a (Yemen) and was told that amateur radio is still not permitted there.

* Rolf XV7SW is a low band fan and a dedicated CW operator. He is using 1 kW power on fixed frequencies of 1827, 3506, 7007, 14016, 14021, 21016, 21019, 28016 and 28019 kHz. He cannot operate on the WARC bands and he does not own a microphone. He uses Drake equipment with a TL922 linear. On 40 metres he uses an inverted V, on 80 metres a ground-plane with four elevated radials, and on 160 metres an inverted L with three elevated radials. QSL bureau cards should be sent to his manager SM3CXS. Direct cards with one "reasonably fresh green stamp (banks do not accept crumpled or dirty notes)" to Rolf T Salme, Embassy of Sweden, Box 9, Hanoi, Vietnam.

* Gary NH2G will be moving to the Philippines soon. His QSL manager is WF5T.

* According to Rolf XV7SW, there are now only five licensed stations in Vietnam, 3W5FM, 3W5RS, 3W6AR, XV7SW and XV7TH. XV1A is a pirate.

* According to Paddy S79MAD, who will be in the Seychelles for another year, there is no QSL bureau on the island and QSLing should be direct to the QSL managers indicated by the operating station. The current licensed stations and their QSL information are: S79BBC, Annamalai, PO Box 96, Victoria; S79JBM, Joel, PO Box 156 Victoria; S79KMB, Keith, QSL via KN2N; S79MAD, Paddy, QSL via GW4WVO, S79NB, Keith, PO Box 448, Victoria or via G6LQL.

* There is a possible record here. W8RV received a QSL card from VS9AJM via W7KCN after 29 years of waiting. The prefix VS9A was used by the Aden Protectorate in 1967.

* Neil VK6NE, QSL manager for the VK9/VK0 QSL Bureau, wants to remind everybody that only the following five VK9 amateurs collect cards from the Bureau: VK9CB, VK9LA, VK9LH, VK9XN and VK9XX. Cards to all the other VK9 calls should be sent direct to the operator's home call or to the QSL managers indicated by them. None of the VK0 stations collect cards from the Bureau; all of them use QSL managers.

* The DXCC desk received 376 applications (27,400 QSLs) during July, and 655 applications (36,367 QSLs) during August, for the DXCC awards.

* Giora Marconi Braga, Guglielmo Marconi's daughter, died in New York on 17 July at 80 years of age. Born in London she had studied in Italy. After marriage to G A Braga she settled in the US and worked for the NBC.

* For many months (for some of us for

more than a year) no one has heard any activity from Mt Athos SV2/A. It came, therefore, as a total surprise when Monk Apollo appeared on the ANZA net on 28 September and made many VKs and ZLs happy by being their first contact with this very rare DXCC country.

* Jim VK9NS has reported that the Kenwood TS680 transceiver, the antenna rotator, the Cushcraft antenna and necessary cabling left Norfolk Island on 10 August and, after an adventurous journey, arrived in Delhi. However, Mani VU2JPS has not yet received the equipment. Hopefully the mystery will be solved by the time you read these lines and Mani will be on the air.

QSLs Received

KC6SD (24 m K7SSD); C91CB (1 m op); 7Q7RM (2 w G0IAS); 5N0MVE (3 m ON7LX); 9N1ARB (14 d KV5V); 3DAOMA (6 m DK8FS).

Thank You

Many thanks to my fellow amateurs whose assistance is always very much appreciated. Special thanks to VK2XH, VK2KFU, VK2TJF, VK4AAR, VK6NE, VK8AV, VK9NS, W1A 140370, ZL4MV, YJ8AA, ARRI. DX Desk, QZD DX, The DX Bulletin, The DX News Sheet, The 425 DX News and GOLIST QSL Managers List.

*PO Box 93, Dural NSW 2158

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Over to You - Members' Opinions

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Amateur Radio to the Rescue

I write this letter in the hope that it may encourage "would be" amateur operators and those amateurs who sometimes might feel that all is not what it should be in this low part of the sun spot cycle.

On 12 July I was involved in an SOS situation on 14.198 MHz at 0700 hrs. After finishing a QSO with a "W" station, I received an SOS call from a sail boat heading for Hawaii from Seattle. USA. He asked me if I could inform the coastguard of his position. Rick Jordan KB7NYN was aboard the "Pacific Adventurer" which was 300 nautical miles North of Hawaii and taking on water at 2000 gallons per hour.

I rang the police at Victor Harbour who asked me to stand by while they telephoned Canberra and gave them the relevant information. Canberra then rang Honolulu. At that time the skipper told me the bilge pumps were not keeping up and he was running an emergency pump. If the batteries gave up they would be in serious trouble. They had the life raft and all gear on deck just in case. At 0858 Honolulu came on frequency and 655 WA7MA in Alaska.

The Honolulu coastguard could not copy the boat on 20 m so I and the WA7 station had to relay between the boat and Honolulu. Honolulu then asked if he could QSY to 7.078 MHz. We did this

but Honolulu could only work USB and the skipper could only work LSB, so that did not work.

We then went back to 14.198 MHz (the boat did not have a marine frequency). At 0930 she was still doing six knots and hoped to get to Lahaina Dock in three days!

We then arranged to keep in contact every hour, but I lost contact at 1030 UTC, maybe due to propagation or something worse. I hope not the latter.

So I would like to say to all those "would be" amateurs out there, this is much more than a hobby. It can and does help save lives. I know I helped; and it's about time the SMA gave us some credit for that when they put up our licence fees.

P J Ptolomey VK5LR
RMD 510
Parawa SA 5211

■

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Packet World

Grant Willis VK5ZWI*

Introduction

One of the biggest problems many amateurs face is working out how to use all the different gadgets accessible on many packet radio networks. Last time I gave a brief introduction to the NET/ROM protocol and how general users can utilise the NET/ROM systems to connect from point A to point B. This month I will take a look at the ROSE networking system, which is commonly used in several states around Australia, and give some examples of how to use ROSE Switches to connect to different things, as well as what services are available from ROSE switches.

ROSE - A Brief Overview

The ROSE packet radio protocol is simply

a different way of passing packets from point A to point B via stations C, D, E, etc. It has some characteristics that are similar to NET/ROM in the way the packets are exchanged between repeaters; however, ROSE presents a different "user interface", or method for users to access the network. The other major difference is that ROSE uses the X.25 computer networking protocol between repeaters, where NET/ROM uses a proprietary protocol that is unique to NET/ROM.

As in a NET/ROM network, there are two main advantages to running a ROSE network. These are that you can automate how packets are switched from point A to B and thus remove the need for everyone using the system to know all the intermediate

repeaters the packets flow through. ROSE also provides some reliability between repeater hops for the transmissions (as does NET/ROM) which is something that simple digipeating cannot do.

Unlike NET/ROM, training a ROSE network to know where all its repeaters are is not an automated process. ROSE switches are configured by people known as switch managers. These people pick which routes are the best for any particular destination based on the quality of the radio signal between the sites and on the speed of the interconnecting link. Alternate routes for use in the event of a switch breaking down can also be programmed in. This manual programming avoids problems that can arise in NET/ROM networks where false routes can be learned by the network during DX band openings. However, it does result in greater delays in opening new routes, as it relies on the switch managers manually reconfiguring the switches.

How is a ROSE Switch Identified?

ROSE switches are given two forms of identification. The first type is their callsign, eg VK5RAD-3, VK2RPH-2, VK6RMS, etc. The second is an X.25 Network Address. This address is normally a six digit number and is assigned to the switch based on the local telephone network numbering system. Some examples of ROSE switch numbers are 883390 (for VK5RAD-3 in Adelaide) and 247600 (for VK2RPH in Sydney). The relationship to the telephone numbering system is given by these examples:

* Adelaide Phone Numbers in the Crafers area start with (08) 8339 xxxx which leads to ROSE switch number 883390.

* Sydney Phone Numbers in the Hornsby District start with (02) 476 xxxx which leads to ROSE switch number 247600.

Some ROSE network areas may be considering renumbering their network addresses in line with what is happening within the Australian telephone network. SA for example has already done this.

There is also an extension to the address when connections are crossing International boundaries. An extra part of the ROSE address is added, known as a DNIC. This is a four digit number which is unique to a country. Some Examples are "5050" for Australia, and "3100" for the USA.

How Do You Use a ROSE Switch Network?

ROSE networks are relatively easy to use once you have the address information for your local area. The combination of local switch callsign and remote network address identification systems must be used to

Example (1) - Getting Switch Information

```
cmd:C VK5RAD-3    <==
*** CONNECTED to VK5RAD-3
<Enter>          <==
-- VK5RAD-3 Rose Switch - 144.925 1200 baud - Crafers, Adelaide --
```

To use VK5RAD ROSE Switch disconnect and issue a connect command like:

```
C dest v VK5RAD-3,nnnnnn
```

Where "dest" is the callsign of the station which you wish to connect to, and the nnnnnn is the numerical address of the switch used by the station to whom you wish to connect.

You may only use 1 normal DIGI to access the switch and one as you leave the switch.

The Following ROSE Switches are operational:-

VK5RAD-3	883390	Crafers/Adelaide	144.925 MHz
VK5RLH-3	888600	Lochiel/Central North	144.725 MHz
VK5RMH-3	886360	Pt Pirie/Mid North	147.575 MHz
VK5RAC-3	886840	Pt Lincoln/Lower Eyre	144.725 MHz
VK5RPH-3	887330	Millicent/South East	147.575 MHz

The Following Services be accessed using connect commands like:-
[Replace VK5xxx-x with your local switch's callsign]

C VK5WI v VK5xxx-x,883521	(Adelaide Central BBS)
C VK5WI-2 v VK5xxx-x,883521	(Adelaide NET/ROM Gateway)
C VK5ALE v VK5xxx-x,886821	(Pt Lincoln BBS)
C VK5SU v VK5xxx-x,886331	(Pt Pirie BBS)
C HEARD v VK5xxx-x,nnnnnn	(Rose Heard Lists)
C USERS v VK5xxx-x,nnnnnn	(Rose User Lists)
C INFO v VK5xxx-x,nnnnnn	(This Information Page)

(nnnnnn is the switch address where you want this information from)

You will now be disconnected. Reconnect to your required station using a command similar to those shown above.
*** DISCONNECTED

Example (2) Rose HEARD List Function display

```
cmd:C HEARD v VKSRAD-3,883390 <+*
*** CONNECTED to HEARD v VKSRAD-3, 883390
Call Being Setup
Call Complete to HEARD-0 # 5050883390
ROSE X.25 Packet Switch Version 3.7 (951010.64K) by Thomas A. Moulton,
W2VY
VKSRAD-3 5050883390 Crafters, Adelaide - 144.925 1200 Baud
Heard List for VKSRAD-3 5050883390
```

Port	Station	Destination	Last Heard	First Heard	Row long ago	RxCnt	FType	Path
0	VK5BWI-1	HEARD	00:00	02:56	84	RR	VK5RAD-3,883390	
1	VK5RAD-5	VK5RAD-3	00:02	02:53	1311	RR		
0	VK5CS-2	ID	00:07	02:47	10	UI		
0	VK5BAD	VK5WI	00:17	02:36	56	UI	VK5RAD-3,883395	
0	VK5ADV-8	ID	00:28	00:57	4	UI		
0	VK5RQ	MAIL	00:34	01:34	6	UI		
0	VK5RQ-13	NODES	00:34	01:34	2	UI		
0	VK5KDW	VK5WI	00:40	02:13	113	UI	VK5RAD-3,883395	
0	VK5RJP-1	VK5WI	00:43	01:04	28	DM	VK5RAD-3,883521	
0	VK5CS	VK5HB	01:01	02:53	194	UA		
0	VK5BBS	VK5WI	01:11	01:11	1	UI	VK5YX	

```
Type H to redisplay, * for ALL or B to Disconnect
HEARD @ 5050883390 >
```

NOT de HEARD @ 5050883390

*** Call Clearing *** 00F1 Remote Station cleared connection

1). This is also the response received when the INFO function is activated on a Rose switch (which I will explain shortly).

ROSE Network Services

As shown in the switch information, Example (1), there are a number of services that a ROSE switch may provide (depending on what your local switch manager has configured). These services include a "HEARD" function (Example 2) which allows you to obtain a listing of all stations heard by the local switch. Also included is a "USERS" function (Example 3), which lists all the current users of a switch. The other most popular function is the "INFO" function, which is a way of obtaining the text as shown in Example (1) from any switch in the network. This INFO function is particularly useful for finding out more about a remote switch and the services offered in its local area.

All of these functions are accessible by replacing the call sign of the station with which you wish to connect, with the name of the function you wish to connect to as part of a ROSE connect command (see the command Examples (2) and (3)).

Making a Connection to a Remote Station

The command to make a connection via a ROSE switch looks like connecting through two digipackets. However, the connections

specify where your packets enter and exit a ROSE network. For example, if I am in Adelaide on 144.925 MHz (the use frequency for the VK5RAD-3 ROSE switch) and I want to connect to someone in Port Pirie, I need to know that my local ROSE switch's callsign on 144.925 is "VK5RAD-3" and that the network address (based on the telephone numbering in Pi Pirie) is "886360". I then issue a connect command that looks like I am about to digipeat through two stations like: C [callsign] Via VK5RAD-3,886360

VKSRAD-3 will receive my connect request and answer it, and then proceed to make the rest of the connection steps required to reach the switch with address "886360". To add the DNIC number to a connect request when connecting to international destinations, the command looks like: *C [callsign] Via VKSRAD-3,3100,455632* (in the case of connecting to the USA) The Examples were recorded "off air" from the ROSE network in Adelaide. Commands typed into the switches are indicated with a "<***" mark.

Finding Out About Your Local ROSE Network

With ROSE Networks, it is often hard for someone who is new to an area to find out information about a local switch. To help newcomers learn about switch facilities, it is possible to simply connect to the ROSE

switch call sign. Once connected, hit <Enter> and the switch should send a page of text giving details about its local area, addresses that are available etc (see Example

Example (3) Rose Active USERS function display

```
cmd:C USERS v VK5RAD-3,803390 <>**
*** CONNECTED to USERS via VK5RAD-3, 803390
Call Being Setup
Call Complete to USERS-0 @ 5050883390
ROSE X.25 Packet Switch Version 3.7 (951010.64K) by Thomas A. Moulton,
W2VY
VK5RAD-3 5050883390 Crafers, Adelaide - 144.925 1200 Baud
```

```
User List for VK5RAD-3 5050883390
Memory Size is: 24820 Bytes
Memory Used is: 9021 Bytes
EPROM Checksum: E6h
```

```

0 AK25 User VK5WI-1 Connected to USERS
5050883390
0 AK25 User FBB Connected to (TXUI) VK5WI
5050883395
1 X.25 Trunk VK5RAD-5 1 5050883395 R1 Online
TXUI VK5WI 8 5050883395 1 P4 D1 > FBB
5050883390

```

There are no calls Pending.

```
Type U for new display or B to Disconnect.
USERS @ 5050883390 >
```

EOT de USERS @ 5050883390

```
*** Call Clearing *** 00F1 Remote Station cleared connection
*** DISCONNECTED
```

Example (4) - Connecting to a Remote Station

```
cmd:C VK5WI v VK5RAD-3,883521 < **
*** CONNECTED to VK5WI v VK5RAD-3,883521
Call Being Setup
Call Complete to VK5WI @ 5050883521
Welcome to the VK5WI Packet BBS, Adelaide's Central LAN BBS
Type ? for list of available commands.
```

This Packet BBS is Operated jointly by SAPUG & WIA(SA)

WIA(SA) Internet Web Site: <http://www.vk5wia.ampr.org/>

VK5WI BBS (A,B,C,D,E,F,G,H,I,J,K,L,N,O,R,S,T,U,V,W,X,Y) >

work far differently from what would normally occur when using digipeater stations. The steps the connection goes through are:

1. Once you have established what your local switch callsign is, and what the destination address is that you want to go to in the ROSE network (using the information obtained in Example (1)), you can issue a connect command from your packet station.

2. The switch will receive your connection request, and before the circuit is completed to your destination, your station will receive an acknowledgment and you will receive a connected message on your terminal. 3. Following step (2), you will receive a message saying "Call Being Setup". This message is sent to you by your local ROSE Switch. The connection to your destination is now being made.

4. Once the connection is complete, you will receive a message saying "Call Complete to [callsign] @ [remote address]". You are then in direct communication with your destination.

In Example (4), I connected to the local packet BBS station, fed from switch address "883521" via the VK5RAD-3 Packet Repeater. This one-step connection gives me direct access to the station I want to connect to. I am blissfully unaware that my packets travelled over a 4800 baud UHF link to reach VK5WI, nor do I get any indication of how many switches are between VK5RAD-3 and the switch addressed by "883521"

You can also add an extra digipeater on the input to a ROSE switch connection, and one on the output if you are not in direct range of a switch. This means that the following connections are possible:

```
C VK5SR v VK5RMV, VK5RPM-3, 887330
C VK3RPG-2 v VK5RPM-3, 887330, VK3RMV
C VK6ABC v VK6RAA, VK6RAP, 3,965540, VK6RPM
```

ROSE Network Messages

During the course of your connection, the ROSE switches will report any link errors

that are detected. These error messages are sent to the user so that they know of the problem. Messages received can relate to radio paths failing, network congestion or errors that might occur when trying to set up the connections in the first place. Each error is reported with an error code, a description (if the INFO function has been enabled on your local switch) and the switch address number which reported the fault. Such information can be useful to diagnose problems in your connections. In Example (5) (extracted from the Rose System manual) I have listed all of the error codes and also the disconnect codes that may be

reported by a ROSE switch network. For further information, contact your local ROSE Switch managers.

Linking via ROSE to Other Networks

ROSE repeaters allow you to connect to any other type of network repeater, BBS, node, wormhole or whatever. It is very easy to connect to, say, a NET/ROM node via ROSE network, simply by linking to the NET/ROM node's callsign via a ROSE switch, just as if you had connected to a BBS or any other station. Likewise, it is possible to connect to other stations via a ROSE network when the first leg of your connection is carried over a NET/ROM network. In the NET/ROM case, the ROSE leg of the connection just looks like you are connecting via a couple of digipeater stations.

ROSE repeaters are also capable of carrying TCP/IP station traffic, and the later versions of ROSE which are capable of carrying packet "UI" (un-numbered information or beacon) frames make TCP/IP operations very easy, and add less overhead than transporting TCP/IP over something like NET/ROM. For information on how to use these advanced aspects of Rose, contact your local ROSE network manager or look around on your local packet BBS to see if they have a copy of the ROSE Network User Manual.

Example (5) - ROSE X.25 Packet Switch Messages

*** Disconnect *** nnnn

This message is sent when your connection to the other station is cleared. The four-digit number (nnnn) describes the reason for disconnection. For your convenience the following table is a list of the codes that are normally seen. The first two digits are only important to this table. If the local system manager has loaded the "INFO" application these messages will be followed by a text explanation.

X.25 Name	Value	Explanation
DTE Originated	0000	The other station disconnected
Number Busy	0100	The other station is busy
Congestion	0200	Retry Count Exceeded
Out of Order	0300	Network link not operating
Not Obtainable	0400	No known path for address specified
Ship Absent	3900	No response from station

Appendix 3 contains a complete list of codes used by the ROSE X.25 Packet Switch.

*** Reset *** nnnn

This message is sent when a RECONNECT command was issued or the link went through a level 2 "Link Reset", to notify you that there may have been some data lost. For the complete list of X.25 Codes and Diagnostic codes see Appendix 3. If the local system manager has loaded the "INFO" application these messages will be followed by a text explanation.

X.25 Name	Value	Explanation
DTE Orig	0092	The other user issued a REConnect
Congestion	0792	A Network Link issued a REConnect

Optimising Your Use of Rose Networks

One trick that I have found very helpful when using Rose networks is to modify your FRACK parameter in your own station. FRACK is the "Frame Acknowledgment time" parameter, which sets the time delay between sending a packet, and then retry the same packet following no response. Due to the delays your TNC will add, because it "thinks" it is working through two digipeaters when you access a Rose switch, retries become much slower. The solution to this is to reduce your FRACK time back to 1 or 2 seconds compared with more standard 4 to 5 seconds on direct hops. This ends up being effectively 3-6 seconds anyway because the TNCs add extra delays to account for the "digipeater hops" which are not actually there.

One point to remember, however, is when you finish using Rose repeaters, to reset your FRACK to normal, otherwise you will become very unpopular with other stations!

Conclusion

I hope this has helped some people with the basics of using a ROSE packet network. There are many more aspects of this protocol and the NET/ROM protocol that I could explain, but I have found that it is easier to learn more by exploring than reading! Hopefully, this month's column and the August column on NET/ROM have given people more of an idea of how to use some of the packet facilities available to them.

If you would like to find out more about the ROSE system, the Radio Amateur Teleprinter Society in the USA (the developers of ROSE) has an Internet World Wide Web site available at URL <http://www.rats.org/> which contains software, manuals and other documentation.

*C/o GPO Box 1214, Adelaide SA 5001
Packet: VK5ZJW @ VK5TTY #ADL#SA AUS OC
Internet gwilts@down.mtx.net.au

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Pounding Brass

Stephen P Smith VK2SPS*

The Bencher Paddle History, Mechanics and Adjustments

Bugs were all the rage for operators who sought to send at speeds greater than could be achieved with the simple hand key, but technology superseded them in the 1950s. These mechanical marvels were soon to be replaced by the paddle and electronic keyer circuits which were to revolutionise code sending speeds.

Keys of the time had a pivoted shaft held in bearings. Early paddle designs copied the vertical bug mechanical mechanism which was quite complex to adjust and took some time to master.

Then Joseph A Hills W8FYO from Ohio revolutionised paddle design. His radical design saw a single paddle mounted on a ring. This ring rested on two bearings which could be pivoted from side to side. The ring was pulled on to the two bearings by means of a spring. He called his design the "FYO Single Lever Paddle".

Hal Communications Corp changed Hill's design by splitting the ring into two halves. Each half was fitted with a lever, but this design was on the market for only two years, 1975 and 1976.

Other manufacturers followed suit, Teletek in 1975 and Bencher in 1977. Hamco incorporated magnetic tensioning into their dual lever models, the "Carson and Scotia" in 1978. Vibroplex bought out Hamco and re-designed the Scotia model and called it the "Blue Racer". Today only Vibroplex, with two models, and Bencher, with several models, keep the Joseph A Hill "FYO" design alive.

I will concentrate on the Bencher range. Bencher paddles are offered in two types, the **lambic** BY series, which consists of four models BY-1 to BY-4, and the **non-lambic** ST series, again consisting of four models. I will look at the BY dual lever range of paddles.

The mechanism is mounted on a solid steel base, the dimensions being 10 x 9.4 x 1.5 cm. Total weight of the paddle is 1.25 kg. Four finished options are available: BY-1 consists of a black base with a chrome mechanism; BY-2 has an all chrome base and mechanism; BY-3 has a black base with a gold plated mechanism; and the BY-4 deluxe model is completely gold plated.

Adjustments

Keyer lever tension adjustment is achieved by varying the length of a small

screw 17 mm long attached to a spring on each of the split rings. The lightest touch, or minimum tension, is achieved with these screws all the way in, that is turning them clockwise. I measured lever tension at 56 gm. To increase tension, turn the screw anti-clockwise; fully out, the lever tension measured 152 gm.

The tool I use to set and adjust the lever tension is a Haldex model LMV1097, a 259 gram gauge, as used to measure spring tension in relays.

Next, adjust the contact gap, which is individually adjusted for each lever by the position of a 20 mm long contact screw which is fixed to a split vertical post. The contact screw is held in place by a small, 8 mm Allen key grub screw which, when tightened, draws in the top sections of the split vertical post together and prevents the contact screw from moving. The maximum amount of horizontal movement of the contact screw is about 4 mm. As mentioned last month, a good rule is to adjust the contact gap to about 1.0 - 1.5 mm, about the thickness of a business card.

The contact points are solid silver with a gold plating, requiring little or no cleaning under normal operating. After some months the contacts should be inspected and cleaned if necessary. Run a small business card through the contacts a number of times until clean. Under no circumstances use sandpaper or a file as this will remove the protective coating on the contacts.

Some Points to Look For

When I first purchased my BY-1 model, I found that the split vertical post had moved somewhat and that the contact screw face was not in line with the contact paddle bracket. To rectify this, I loosened the split vertical post screw underneath the base and moved the split vertical post either right or left until the contacts were aligned then re-tightened the screw (an easy adjustment).

Another problem encountered, similar to the one just mentioned, is when the contacts don't line up and are not flush with one another when the contact screw is adjusted all the way in (no gap); even moving the split vertical post small amounts right or left cannot rectify this problem. The contact paddle bracket must be bent to correct this error. Take care when bending that no damage to the rest of the mechanism happens. Use a pair of long nose pliers for this adjustment, one to hold the contact

paddle bracket steady and the other to do the bending.

Adjustments should be checked regularly, depending on how often you use the paddle. Springs should be replaced every few years. If you don't do much paddle operating, remove the tension from the springs. It only takes a few moments to adjust your paddle and get on air. I know of some operators who apply "lock tight" to all screws. This permanently sets the paddle; I don't recommend this to beginners.

At this stage I have not mentioned the position of the hand in relation to operating. I believe photographs speak better than a thousand words, and I'm in the process of preparing one for publication.

Repeater Link

Will McGhie VK6UU*

Tasmania Left Off the Map

In my last article relating to TACs and the poor response to FTAC material, I left VK7 off the list of TACs. I had copied the list from a FTAC list, that just happened to have left off VK7. I had the bad luck to find the only FTAC document that did not have VK7 on the list. My apologies to VK7. For the record the VK7 TAC representative is Tony VK7AX.

TACs On Packet

I have had considerable success in tracking down TACs on packet. At this time all but VK3 have been located on packet. If keeping in touch via packet proves successful, then perhaps FTAC will receive more feedback and all will be better informed, and decisions made in considerable less time.

10 Metre Gateways

During a lengthy phone call with John Martin, Chairman of FTAC, he confirmed that 10 metre Gateways are now permitted, as the band plan has been changed to accommodate them. At this point the band segment 29.1 to 29.3 is where Gateways can be located, as far as FTAC is concerned. As for the SMA, who knows?

It is suggested that only one frequency at this time be used for all Gateways in Australia, and 29.120 MHz is the possible frequency. It is also suggested that all Gateways be decode/encode, in/out. All Gateways require a CTCSS signal input to operate, and have the same CTCSS signal encoded on their transmissions. This should solve many problems on 29 MHz and allow

Price Range

The BY-2 standard black model sells for \$151.00; the BY-2 chrome model for \$187.00; and the BY-3 deluxe tangle gold paddle for \$250.00. If you are lucky you may be able to purchase a Bencher paddle from the *Amateur Radio Hamads*.

MFJ Enterprises have brought out their own model tangle gold paddle, model MFJ564, which has a chrome plated base with metal mechanism. At this time I have no further information about this model.

Next month, a look at the Index LAB QRP rig and a new NATO military key.

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accessible or recorded. Amateur radio is a technological hobby and as such is under constant change. Documenting our hobby and, in particular, voice and digital repeater systems, is important if the maximum is to be gained, without re-inventing the technology all over again, at the expense of real advancement.

For too many years my efforts in establishing repeaters were frustrated by my reluctance to spend the time to document the repeaters that were put into service. Circuits did not reflect accurately the repeater design. When a problem occurred with a given repeater, the lack of good circuits increased the difficulty in repairing or modifying the repeater.

However, faced with an ever increasing problem as the number of repeaters grew, there seemed little that could be done without a big sit down and commencing drawing with paper and pencil. I never liked or disliked drawing. It was just a chore that, at best, was never very satisfying or much fun. Then I took the plunge and bought a computer and my first CAD program.

Easy?

It might be worth saying that CAD is not easy, but it's not hard either. It is about as difficult to learn as a modern word processor. You don't have to know all there is in a CAD program to use it successfully. Just like a word processor, much of it remains a mystery and yet you use it all the time. If you are not into computers, then all I can say is you should be. One day you will be, so why not now? Computers are, at times, an endless source of frustration, but as they can do so many things there is no alternative to becoming involved.

Back to my beginnings with CAD. My first computer was an Amiga 500 and the CAD program I started with was Intro Cad a very good CAD program. This program taught me what CAD is. The first effort was a simple one stage transistor amplifier, and it took eight hours to draw it, some 12 components. The main difficulty I had was how to join lines so they met perfectly. Try as I might, no matter how careful I was, they would never join seamlessly (is there such a word?). But rather than recount my lengthy introduction to CAD, some CAD fundamentals first.

Simple to Start?

Drawing circuits using CAD is about the simplest requirement that you can put a CAD program to. Most circuit drawings are two dimensional and the lines are at right angles to one another. Unlike many other forms of drawing, which require to be three dimensional, and have lines that are at all

several Gateways to operate in Australia, all on the same frequency. All Gateways are to use different CTCSS tones, so no linking between gateways will occur, at least for the moment. Linking Gateways is the next hurdle with the SMA.

If you want to put a 29 MHz Gateway on air, what are your thoughts on 29.120 MHz? In order to co-ordinate their use, different CTCSS tones for each Gateway will have to be allocated, or first on first choice of CTCSS frequency. The next Gateway to use any CTCSS tone, other than those already in use. Sounds like a good idea. Note, the users will have to encode their 29 MHz transmissions. They will not have to install a decoder, however, and could monitor 29.120 MHz and hear any Gateway that propagation allows. If the user installs a CTCSS decoder, then selective monitoring can occur.

When putting your application into the SMA for a 29 MHz Gateway, include the information that it complies with the WIA band plan. Best of luck.

CAD Drawing

I have wanted for a long time to write about Computer Aided Drawing, CAD for short. Like most who have been involved in repeater development in Australia, I have spent many hours trying to make it all come together when it comes to putting a repeater on air. There is a constant renewal of amateurs involved in putting a repeater on air. Many of these amateurs struggle all over again, doing what has been done by many before, but where is all this past knowledge?

It, of course, resides in the ageing brains of amateurs, and little of this knowledge is

sorts of angles to one another, circuit drawing is easy. It is important to mention that trying to describe CAD circuit drawing using words is not easy, or very effective. The best way is to watch someone do it. As we don't have this available, words will have to do.

How do you start a CAD drawing? You have booted up the program and there it sits on the computer screen, a blank piece of "paper". Blank is not quite true; most CAD programs have a single line border in landscape form, long side horizontal and short side vertical, a rectangle. This border contains the drawing space and prints out onto paper with your circuit. Most aspects of CAD programs can be configured. For a start the colour of the blank bordered screen. It can be any colour you like, but white with black lines, (the circuit) or black with white lines is the option most people use. So let's say we have a white screen with a black single line as a rectangular border around the outside.

A circuit, by and large, is made up of single straight lines of varying lengths, with the odd circle, arc and zig zag (resistor). To draw a line using CAD, you use the mouse to select line drawing from the pull-down menu, or icon. You then move the mouse to where you want the line to start and click the left button once. As you move the mouse to where you want the line to end, a line is drawn following the mouse. This line is not a freehand line; it is at all times a dynamic straight line from where you first clicked the mouse. As you move the mouse, the straight line grows in length. You decide where you want the line to end and click the left mouse button again. Then you have a perfectly straight line starting from where you wanted it to start, and ending where you wanted it to end. The line is clean with no smudges or imperfections.

Only Lines

Before we continue on, let's describe this line that has just been drawn. It is what is called a vector line. It has two sets of co-ordinates and is represented, for example as 1,2 - 4,2. This means the line starts at X=1, Y=2 and ends at X=4, Y=2. It is a straight horizontal line starting up from the bottom left corner of our rectangular border, two units (Y), and in from the left border one unit (X). The line ends three horizontal units along. The word vector means the computer defines the line as having, in our example, a length of three units with no width. Lines drawn using CAD vector based programs have no width. They appear on the screen as a thin line, and if you zoom in on the line, it maintains its width, ie the line does not get thicker. This is different from other types of

drawing programs that are pixel based. As you zoom in on a line in one of those types of drawings, they become wider and you start to see the individual pixels.

Zoom

This brings us to the next useful aspect of CAD programs, the zoom function. Some of the FM828 drawings I have done on computer contain over 2,000 individual drawing elements. When such large and complex drawings are viewed on the computer screen, little detail can be discerned. The components are too small to view and the component text details cannot be read. The zoom function allows you to pick a portion of the drawing, by placing a box around it using the mouse, and displaying the magnified portion only on the computer screen. Now the individual components can be as big as you like. You only see a small portion of the overall drawing, but it is of a size that can be viewed, and worked on. Most of the drawing that is done on a computer is done in the zoomed-in situation. Fine circuit details are added or edited with only a few components filling the computer screen. And remember, the line thickness always remains the same. No matter how far you zoom in, the lines maintain the same thickness.

Just how far can you zoom in? The answer is a long way. So far that all you would see is a tiny part of a line, or two intersecting lines, filling the computer screen. Individual resistors can be viewed filling the whole computer screen. Not that this degree of magnification is needed, but it is possible.

Snap

Before going any further, the "snap" facility must be mentioned. As I commented earlier, my first attempt at CAD took a long time to do very little. I could have used a pencil and paper and drawn the simple circuit a hundred times over. What was missing, apart from CAD experience, was using snap. Snap allows lines to join perfectly. This is done by breaking the drawing area up into a grid of intersecting points. These intersecting points are called snap points. You define the grid size, this meaning how far apart the snap points are. Lines then can only begin and end at a snap point. The more fine detail you require to place on the drawing, the more snap points you require. The grid can be visible or not. With the grid off, the screen shows no evidence of snap or not, but as soon as you start to draw a line with the mouse, it only allows the line to start at one of these snap points. The big advantage is that any line that is drawn can have another line drawn to it, be it start, end, or any snap point along the

line, perfectly. Lines now meet spot on and drawing a line to meet another is easier, as the computer only requires you to move the mouse to about where you require the line, and hit the mouse button. The computer draws the new line perfectly to the original line.

Starting

So how do we actually draw a circuit? If you have seen any computer drawn circuits, it is easy to wonder where do you start? It does require a degree of perspective in your own mind first and, most important, a decision on scale. Scale is what a given distance on the computer screen means in terms of distance. One centimetre on the screen can equal any real distance, for example one metre. With circuit drawing this is not particularly relevant. The scale often chosen is one to one. One centimetre on the computer screen equals one centimetre on the printed page. What is important is that a common scale is decided upon so all drawings are interchangeable with one another. If you want to import one drawing into another, all aspects match. This is even more important to maintain compatibility with drawings others produce.

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Back to Starting

Back to starting a drawing. If the circuit has few components, then these components are drawn to roughly fill the drawing space. Hence symbols are drawn larger than in a circuit with many components. This brings in the subject of symbols. Symbols are pre-drawn drawings of things like transistors, resistors, etc. These symbols can be selected and placed anywhere into your drawing. The symbols can be sized to match your requirements. Simple drawings require the symbols to be larger. This is done on selection of the symbol, as you can scale the symbol up or down. The symbol, once placed on the screen, and with snap on, snaps to the nearest snap point, where you require the symbol to be. Now, when you draw a line to connect this symbol to the rest of the circuit, the lines all meet easily and perfectly.

Copy

Any object placed on the drawing screen can be copied. Symbols are put on the drawing space as a single object. If you want to move a symbol, all the component parts of the symbol (lines, circles, etc) move or copy as one. It is faster to copy an existing symbol already on the screen, than select the symbol from the symbol library again. Select copy from the menu or the copy icon, select the symbol that is already on the screen you wish to copy, and a copy is made that you can place where you want it. The process is fast and easy. Until you cancel the copy of the symbol, you can place as many copies as you like, one after another.

Copy Copy

While on the subject of copy, this is one of the most used commands. Many circuits have repetition in them. For example, a 10 input audio mixer with 10 input level controls, and associated components, all identical to one another. You simply draw the first one and then copy it so you end up with 10 inputs. Many times faster and neater than using pencil and paper. The mechanics of drawing to make up a circuit become very fast.

How Fast

One question often asked by people not familiar with CAD is, "Is it faster than using paper and pencil?" The answer is yes. Even designing a circuit from scratch, CAD is faster. I do all circuit design work using CAD now. You have a circuit idea and start drawing it on the computer. Circuit mistakes and design changes are easy on CAD. To remove or relocate a component is simple. Select the component, line, symbol, or whatever and delete it or move it. To describe the process would not do it justice.

It is a case of a picture being worth a thousand words.

More About Symbols

Another question asked about CAD is, "Where do you get the symbols." The answer is, you draw them. I have looked at many symbol libraries and most I have found are not to the style we use. Non-technical people often draw symbols different from the way we like to see them. There are Australian standards on electronic symbols, and it is best to try and use these standards. However, it is up to personal taste as well. For instance, I prefer zig zag resistors to rectangles.

Drawing of symbols can be difficult. It often depends on the particular CAD program you use. I have used many CAD programs, from the very expensive, to the cheap shareware ones. Where the problem occurs is in the degree of options a particular program provides. Circuit drawing is one of the simplest types of drawings that can be done on computer. If you end up using a CAD program that gives you many options, most of which you don't require, the difficulty of using the program increases. For example, try making a symbol using AutoCad and then using Draft Choice.

For a start, AutoCad does not call a symbol a symbol. Symbols are called W Blocks. I have no idea why, but if at the first attempt to draw a symbol I have to fight with a new set of words, I start to dislike the program. It may do the program an injustice, but I like programs that are intuitive. If you want to make a symbol, select the make symbol icon and the program leads you through a simple, easy to understand, process.

Draft Choice

As the size of this article grows, I can see it could become larger than Ben Hur. What I hoped to do was to find out if there is any interest in CAD drawing for amateurs. An article to whet the appetite and, if I receive encouragement from you the reader, then more information could be provided.

This leads me to the "best CAD drawing program in the world." For all you CAD users out there, I'm sure that I have your attention. After years of trying many, Draft Choice (PC) is the best for circuit drawing. I have tried some really terrible CAD programs. They are slow, non-intuitive, difficult and, all in all, a waste of time. Draft Choice is cheap (the number one amateur requirement) as it is shareware. You can obtain a copy for nothing. If you like it and use it, then register it.

To list some more likes about Draft Choice. It is DOS based, and will run on any

DOS based computer. It is fast, even on the old 286. It is mouse and/or key board driven. It is in 16 colours, unless you are using a very early computer. Draft Choice's biggest plus is that it is easy and intuitive to use. There is a Windows version as well, but I find the DOS version better.

Growing

As your library of circuits grows, you find parts of one circuit are just what you require in the new circuit you are drawing. Rather than re-draw this part of the circuit, it can be imported from one circuit into another. No re-drawing; just place it in the new circuit under construction and add the new circuit around it. Fast and fun.

Fun

This brings me to the best part of CAD. It is fun to do. Circuit updates are fun and easy to do. The latest modification to your repeater can be added to the existing CAD circuit easily. The result looks good. I find it no longer a chore to put updates onto the circuit.

Availability

Another big plus with CAD is that it is transportable. Being a computer file it is easy to send anywhere in the world, be it on computer disk, packet, the Internet, or e-mail, the list goes on. And, when it gets to the destination, it can be easily modified, and the modification sent back to you for your reference. Just in case you are wondering, all CAD circuits can be printed out. Once the drawing is on the computer screen, printing it is only a button push away.

Interchangeability

Big word, big problem. Can a CAD drawing done using a given program be loaded into a different CAD program? The answer is yes, but; and it is a big but. Compatibility is not a strong point with CAD or, for that matter, any computer program. All CAD drawing programs like to save drawings in their own format. Format is simply the way a file is written. A bit like writing a document in French or English. The same information but different language.

There are import/export functions in most CAD programs. The drawing you have can be saved to another file format. There are a couple of "universal" file formats, DXF being one of them. By and large this works fairly well, but not always. Your drawing might import into another CAD program, but the text may be in a different font, or arcs (part circles) drawn 180 degrees rotated. The solutions can be easy or hard.

The real solution to interchangeability

problems is to all use the same CAD program. A difficult result to achieve. As you know my choice is Draft Choice.

Much More

This article has only scratched the surface of CAD for circuit drawing. Topics not covered, for example, are rotating objects, drawing lines using Ortho, breaking lines, layers (very useful), etc; the list is very long.

It is a lot of fun once the fundamentals have been mastered. The benefits are many and, in particular, enable a free, easy

exchange of circuits between amateurs. If you want to know more about CAD drawing, I may add more to this article. Perhaps you found the article difficult to understand and it requires a different presentation. All this aside, if you require a copy of Draft Choice Version 2 for review, along with some circuit examples, I can send you a copy on disk, or via E mail. The program size is about 360 kB.

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BT

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2/8: 50 MHz DX Challenge Result. Congratulations to Jose EH7KW and KB5IUA on winning the 1996 50 MHz Challenge at 8057 km. The prizes of Infra-Red Communications Headphones will be posted to both soon ... now its the turn of VK/ZLZS stations in December/January [What about some specific details please Geoff so that I might better inform the VKs ... de VK5LP.]

4/8: Good opening in Europe: 5B, SV, Z3, UX, 9H, EH, IT9, OZ, CT, YU, 9A, I, DL, HB9, PA and F were all worked/heard from the UK (14 countries). Both double hop and single hop was observed.

5/8: News from Japan de JA1VOK: JA0GLM (PM97) worked VK6JJ (OF88) near Perth on 50.112 CW with RST 539 at 0529 on 4 August in suddenly improved conditions for south. "I found the QSO by scatter and quickly called VK6JJ after the QSO, but no response was received". BV was heard by scatter beaming 200 degrees. JD1BJP and VR2ZXY were open as well as very strong 9M 48.24/48.25 video. Has autumn TEP come?

5/8: Another good day in Europe and 27th Transatlantic opening for summer. Today's highlight was KP4EIT working UK and PA. Lots of other single hop stuff through the day in Europe, including CU7BC. Frank PA3BFM also worked KP4; G to OH, CT, F, EH7, I; EI to GJ and DL; GM to GJ ... most of the day. At 2010 K1TOL reported CT video.

7/8: VK Es opening, double hop in winter ... de VK3OT: Opening from here (VK3) to Eric FK8GM in New Caledonia. Interesting because no one can remember ever getting a double hop that way in July before; he was quite weak and we had a path to VK4 at the same time.

7/8. Another great day in August! Plenty of single hop in Europe once again, G to SP, YU, 9A, YO and ES in the morning, plus Bob WA1OUB copied 48 MHz EA video at 1020 which is quite early, especially in August. GM to Italy in the afternoon; Emil W3EP also reported video in all morning at his location. JL4GTO worked HL1LTC via Es today at 0300. CT0WW in for two hours at GJ4ICD. GJ6ATZ also reported OM and Italy showing how widespread the event was. Also EA to CU7 was reported early evening.

10/8 1930 to 2100: Bo OX3LX worked G, GI, GM, GW, DJ, F, PA, ON, SP, OK ... 27 QSOs into Europe. 1941 HI0VHF into GJ weak, the first time we have ever heard it in Europe!

11/8: Big European opening today and

versions will be available shortly, possibly by the end of the year. It will be convenient if both the new brochures and revised examination papers can be introduced at the same time.

Part of the revision has included a close look at the theory syllabuses (I have mentioned this previously) and preparation of a Regulations syllabus. These will be included in the revised RIB 70.

Be assured that plenty of notice will be given via this magazine, Divisional broadcasts, and notes to examiners before changes are made to the current Regulations Bank.

*PO Box 445, Blackburn VIC 3130

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Education Notes

Brenda M Edmonds VK3KT* Federal Education Coordinator

A couple of months ago I gave notice that work was proceeding to update the Regulations Examination papers to take into account the recent changes to licence conditions. This has entailed considerable liaison with the SMA over proposed questions, and some consideration of the draft Regulations Question Bank.

Unfortunately, an unforeseen health problem has held this work up for several weeks, and so has postponed the introduction of the updated papers.

However, I am assured that the SMA has continued work on the revision of the brochures RIBs 70, 71 and 72 and that new

VHF/UHF - An Expanding World

Eric Jamieson VK5LP*

All times are UTC.

Activity on 24 GHz

David VK5KK reports: Winter has not been the most ideal time to experiment with 24 GHz due to the high absorption rate of 80% plus humidity or 100% humidity, ie, rain or fog means absorption of 3 dB per km!

On 8/9/96 at 0801, VK5DK/p and VK5KK (QTHR) established what is thought to be the first two way VK5 contact on 24.150 GHz over a path distance of approximately 1 km. Signals 5x9++ Equipment identical each end using 40 mW Gunn diode transmitters with 100 MHz wideband FM IFs into small horn feeds with approximately 13 dBd gain.

Further experiments on 10/9 between VK5NC/p and VK5DK/p established contact over 5.5 km, with work now being carried out on higher gain antennas to extend the

range to cope with the less than ideal "damp" conditions.

Six Metres

Virtually no six metre activity has been reported to me this month; everything of importance appears to be occurring in the northern hemisphere.

John VK4FNQ said he heard Joe VK4JH working VK2EU at 0254 on 20/8, so it's been relatively quiet even in North Queensland.

Internet Six News

The "On-Line" Six Metre Magazine prepared by Geoff GJ4ICD is provided to me by John VK4FNQ. Thanks John.

1/8: After a long delay the V51 beacon is back on air, following a rebuild by GJ4ICD. It runs at 60 watts to a 5/8 vertical, V51VH callsign, locator JG87, 50.018 MHz. Reports to V51DM, Derek Moore, PO Box 22951,

#30 Transatlantic opening! Single hop started very early between G and most of Europe. Superb conditions to JX, TF at GJ4ICD, worked JX7DFA for country #157 and GJ first, grid #673 and new major grid #76 Also worked TF3T/HP93 for 71st country in 1996 and #674 grid ... de GJ4ICD.

12/8: USA to Europe #31 opening: W1/2 worked I, CT, EH and VE1RAA worked IK8MKK from 1840 (nice haul). Also Steve W2CAP/1 had 65 QSOs and worked HB0. Stations heard in G/GJ were W1/2/3/4. Certainly a big opening for August lasting over two hours. Bob WA1OUB had 50 QSOs and best DX from FN43 was IK8RO in JM88 at 7125 km. What a year!

13/8: Another widespread European Es opening and Transatlantic #32: CT0WW/b into EM95 at 1350, EH into USA again and G, etc into W1/2/3. CT3 and EH8 to USA.

17/8: Yet another opening across the pond, #35! 2306: VE1PZ worked EH1YV. Also single hop most of the day in Europe.

It is quite incredible the number of double hop Es contacts between Europe and North America during the northern summer. Their August contacts are equivalent to VK doing the same in February, which normally would be rare on such a scale. Our lack of countries to the east and west make it difficult for us to even approach the European efforts.

The contact at 0529 on 4/8 (mentioned above) between JA0GLM and VK6JJ near Perth on 50.112 at 539 is interesting but not unusual as the equinox often brings TEP contacts.

The following reports came via Internet/UKSMG/JA1YOK FIVENINE Magazine:

Yvon FRIGZ on Reunion Island is expected to be active on six metres running 10 watts to a five element Yagi. [FRIGZ was reported in the August notes as the station to have heard the Bunbury beacon VK6RBU on 144.560 MHz in June. Based on the multi-hop Es contacts made this year in the northern hemisphere, the distance of around 6000 km from Perth should not be beyond expectations for a six metre contact - VK5LPJ]

During the recent expedition to Georgia as 4L6PA, by Tjerry PB0ANX, Willem PD0OHV, Pim PA0TLX, Kees PA3EQK and Allard PE1NWL, over 500 contacts were made with 47 countries on six metres including:

16/6: 4G6UJ 0410, SV1UN 0917, CT3FT 1014, YO7VS/p 1029, LZ2HM 1043.

18/6: SV1SIX/b 0900, SV1AHX 0900, SV5/DL8SET, JA6QGG 0944, JA6IMJ, JA5GJN/4, JK6PAC heard, PA3DWD 1757, DK2PR 1757, PE1LCH, PA0COR.

19/6: SV1UN 0619, 4Z5JA, 4Z5DB, S59A 1747.

20/6: VS6XMT 0619, JR6HI, JR6VSP, SV1EN, SV1DH, SV1AHP, 9A2DI 0810, ER5OK 0945, IK0FTA 1134, Z3ZFC 1134, SP3UCA 1247, OM3PC 1318, YU1EU 1935.

21/6: GJ4ICD 1204, G4JCC 0932.

22/6: RA3YO 1002, HA8BE 1154, SM7AED 1223, ON9FCB 1354, EW1AA 1432.

23/6: UX0FF 0646, OZ1IEP 0721, OK9NI 0739, F5JJK 0745, GW0GEI 0805, EH1DDU 0914, 9H5EE 1227, OH3NLP 1627, LA8WF 1652, OE6BMG 1659.

25/6: EA6OK1GW, HB9DBM 1923 and 27/6: 9K2CA 0900.

The above shows the spread of contacts and the ease with which so many countries can be worked in a few days with a well organised DXpedition surrounded by a mass of countries. The operators of 4L6PA donated a TS-690 to Omari 4LO plus a five element Yagi which is mounted four metres above Oman's roof.

Arcctic Beacons

The following beacons have been set up to investigate the trans-polar paths: JW7SIX 50.047, JQ88: JX7DFA 50.079, IQ50: LA7SIX 50.051, JP99, OH9SIX 50.067, KP36: OX3VHF 50.045, GP60: TF3SIX 50.057, HP94: and VE8BY/b 50.048, FP53.

Trans-polar paths have already been observed:

20/5/96 G3HBR copied JW7SIX/b 579 between 2119 and 2132 at 3030 km; OZ4VV copied VE8BY/b between 2105 and 2130 at a distance of 4305 km.

25/5: VE8BY/b into SM3BIU between 2048 and 2052.

27/5 VE8BY/b into SM4POB 2025 to 2050

No satisfactory QSOs have yet occurred, but the distances are considerably shorter than those over the Antarctic from Australia to South America, which is also the subject of scrutiny

High Power Permits

The provision of written permits for the use of high power on 50 MHz appears to be a thing of the past, in the light of a letter from the SMA to Steve VK3OT, who had requested a renewal of his high power permit for 50.0 to 50.105 MHz EME tests

The SMA advised that. Many apparatus licences (including amateur) are now covered by a Technical Licence Specification (TLS) which specifies many things including permitted frequency bands and transmitter output power. The amateur TLS now prevents the SMA from approving high power operation or operation outside of amateur bands by means of a letter of authority. Approval for any operation outside the parameters set down in the TLS would now have to be granted by means of a separate Scientific Assigned licence.

As you may be aware, the segment 45 to 52 MHz is designated primarily for broadcasting purposes and the SMA can only issue licences in this spectrum if approval from the Australian Broadcasting Authority is obtained. The ABA have advised the SMA that they do not agree to high power operation in this segment due to the high likelihood of interference to Channel 0 television operation

I am therefore unable to accede to your request to approve operation at a power level greater than 100 watts in the segment



VK2ALU's 3.7 metre 10 GHz EME dish in its operating position at the front of VK2ALU's QTH during a 10 GHz EME test with G3WDG. The dish is looking towards the western horizon window with G3WDG.

50.0 to 50.105 MHz. I will also be writing to the Wireless Institute of Australia in regard to this matter (Signed) Fred Gengaron, Manager, Technical Services, Customer Services Group, 6 September 1996

In order to continue to preserve our use of 50 MHz, it behoves everyone to operate strictly within the terms of their licence and the power levels that are permitted, particularly in those areas which are designated for Channel 0 coverage.

If by any chance you are not conforming to the rules, then your selfish actions may lead to everyone losing that "magic" portion of six metres, 50.0 to 50.150 MHz in particular, which gives us a chance to operate in the same segment as other countries with 50 MHz privileges. I appeal to everyone, please play the game as it should be played and accept your responsibilities towards your fellow operators.

Please remember that another solar cycle peak is approaching and with it the many long distance contacts which are possible via F2 propagation. Let us be there when the time comes – it's up to everyone!

Ten Gigahertz EME

I refer to my mention last month that, on 18 August 1996 at 0950, Lyle Patison VK2ALU contacted Charlie Suckling G3WDG on 10 GHz EME over a path of 17,000.4 km which, as far as is known, is a new world record for 10 GHz. Also, this was the first Australia to UK 10 GHz EME contact, the first Australasia to Europe 10 GHz EME contact, and the first SHF contact between those areas. On the same day at 1015 Lyle also worked Petra Suckling G4KGC, wife of Charlie Suckling.

The promised further details are as follows. VK2ALU gave G3WDG an "O" report and received an "M" report which later was changed to "O" as the 25 minute test proceeded. The moon was rising over the UK, commencing with the moon at about four degrees elevation and finishing at approximately eight degrees, thus G3WDG's antenna side lobes would have been seeing some ground noise at the lower elevations.

It took only 7.5 minutes for VK2ALU and G3WDG to complete the required procedure for a valid contact, with "O" copy both ways, leaving five minutes to spare in the common window period.

Weather conditions have a much greater effect on 10 GHz path loss when very low elevation angles are used. VK2ALU reported rain scatter effects on G3WDG's signal from showers in the Wollongong area though it was fine at G3WDG.

As a matter of interest, a previous attempt



Another view of VK2ALU's EME dish, showing the trailer on which it is mounted and several of the four levelling jacks which are bolted to concrete plinths set below ground level once the trailer is positioned for a test.

between these stations was disrupted by rain scatter in a thunderstorm on the path near G3WDG.

With the moon closer to apogee than perigee during this test, and the other losses associated with the lower elevation angle, the total path loss was probably over 290 dB.

Both stations used linear (vertical) polarisation and a spatial polarisation shift of approximately 20 degrees was involved, causing a further degradation of some 0.3 dB.

Equipment

VK2ALU – A 3.7 metre Andrew dish of low side-lobe design, with Gregorian sub-reflector and substitute pyramidal feed-horn; 25 watt TWT and a G3WDG004 HEMT preamp.

G3WDG – A three metre Andrew dish with 10.7 – 11.7 GHz feed; 2 x 20 watt TWTs (40 watts combined) and a G3WDG004 HEMT preamp.

Both stations used moon noise to provide accurate tracking and VK2ALU had the added facility of an auto-track system during the 2.5 minute transmit periods (a "home-made" system.)

VK2ALU's 3.7 metre dish had to be mounted on a trailer to allow it to be moved to a position on his property to take advantage of the one and only very restricted take-off towards the west, trees completely blocking anything below approximately 30 – 45 degree elevation at all other places! The trailer mount is a permanent facility, being purpose built with welding assistance from Mike Keach VK2DFK.

Two or three members of the Illawarra Amateur Radio Society assist at test times, placing the dish trailer in position so it can be hitched to the front of the car for guiding into position, setting up levelling jacks on concrete pads which are on either side of the front driveway. After the tests they assist in placing the dish as far from public scrutiny as possible!

The position of the dish is about 25 metres from the EME operations area at the rear of the garage, with remote control via some 60 cores and three coaxial cables.

One of those present (on 18/8 it was Bob Maughan VK2CRM) acts as second operator and his job is to operate the azimuth and elevation buttons on the control unit during the 2.5 minute receive periods in order to maintain moon noise at a maximum (dish pointed accurately at the moon, within 0.1 degrees). The auto tracking unit then takes over during the intervening 2.5 minutes transmit period. The half-power beam width of the dish is less than 0.6 degrees!

Lyle is grateful for the assistance provided by the local amateurs plus that from amateurs both in Australia and overseas who have provided various specialised bits and pieces and helped with their knowledge in the EME field and construction of microwave equipment. Several non-amateurs have also been very helpful.

In summing up, EME work is never for the faint-hearted and even more so when undertaken at 10 GHz. Copies of the confirmation QSLs from G3WDG and G4KGC have been provided with the information. Good work Lyle.

The UK and Europe

Ted Collins G4UPS in his August report says that Tony Selmes has returned to Orman for another two year tour and is active on the bands using his old callsign of A45ZN. While he awaits an experimental licence for the six and 30 metre bands, he operates from a friend's yacht using the callsign ZS1D/mm. Locator is LL84. Hopefully he will still be there when F2 returns.

Ted has asked that it be made known that Tony's QSL Manager is G4UPS, 27 Parklands, Hemyock, Cullompton, Devon EX15 3RY, UK.

From 5 to 17 August Ted took a short holiday and operated as G4UPS/p from a caravan site three miles west of Evesham IO92, using a TS-680S and a 25 watt linear to a two element HB9CV antenna at 18 feet. He maintained his daily skeds with SM7AED and G3CCH, which generally were at good strength.

It is of significance to note that throughout August, both from his home and holiday site,

that no mention is made of hearing or working stations from North America.

That the summer Es was waning is shown by the following countries worked. 9H, CT, D, EH, G, GW, HB, I, IS0, LA, OE, OH, OK, OZ, PA, S53, SM, SV, YO, YU, Z32, ZB. I suppose 22 countries is not a bad effort for an "off-month!"

North America

Emil Pocock W3EP writes in *The World Above 50 MHz* in QST that Jimmy Treybig W6JKV and Mike Staal K6MYC operated as V47KV and V47YC from St Kitts (FK87) from 1 to 9 July, with big power on six metres and an EME station on two metres. They logged 700 stations on 50 MHz, 150 of which were with Europeans. Amongst their longest QSOs were those to the Pacific Northwest in the 6000 km range, comparable to many of their European contacts! N7DB worked V47KV after 1430 on 2 July at 6300 km for one of the longest reported QSOs. On 144 MHz, the pair logged 90 EME stations, starting with WSUN, KB8RQ and KN6M, and including 20 Americans in all. They also made two metre sporadic-E contacts in the US southeast.

Conclusion

November should see increased Es activity throughout the Australian and Pacific regions, mostly on six metres but also two metres. Operators are again reminded to keep 50.110 MHz clear for possible contacts beyond VK and certainly not for VK to VK, VK to ZL and ZL to ZL.

Please keep me informed of your contacts so an overall picture of the degree of activity may be apparent. Packet messages addressed directly to me appear to get through, but general information relating to VHF and six metres seems to become lost in the system most of the time. I am still waiting to have my e-mail up and running!

Closing with two thoughts for the month:

1. Where does the family start? It starts with a young man falling in love with a girl – no superior alternative has yet been found, (Winston Churchill), and

2. Sometimes the best helping hand you can get is a good, firm push.

73 from The Voice by the Lake.

*PO Box 169, Meinung SA 5264

Fax (085) 751 043

Packet VKSLP@VKS.WI.NADL.SA.AUS.OZ

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Spotlight on SWLing

Robin L. Harwood VK7RH*

In last month's column I referred to a crisis that had erupted following the movement of Iraqi troops into the Kurdish regions, close to the Iranian and Turkish borders. This region was regarded as a safe haven for the thousands of refugees fleeing Saddam following the Gulf War in 1991. To protect these Kurdish refugees and the Shi'ite minority in southern Iraq, the victorious allies imposed two no-fly zones at opposite ends of Iraq and enforced it. Resulting from the Iraqi troops moving into Irbil and other Kurdish towns, the Americans increased the two no-fly regions, the southern being extended into the suburbs of Baghdad, the Iraqi capital. Saddam also ordered his troops to defy the no-fly restrictions, which led to the Americans briefly raiding several small aerial command centres in the south.

The Iraqi troops eventually pulled back as they had made an agreement with one of the Kurdish factions, fighting against an Iranian backed militia. The Kurds were expecting material support from the Allies in the form of aerial support yet this did not eventuate because of differences amongst them. The Americans had also been trying to mediate between the two Kurdish factions without success and not surprisingly did not intervene militarily after the Iraqi-backed faction gained control of the region.

As mentioned last month, there was an increase in broadcasting to the region at the height of this crisis, which has decreased since other events have now taken centre stage. The clandestine operation of one of the unsuccessful Kurdish factions has also disappeared from within the safe haven region. It was in the 60 metre tropical allocation and was easily heard as far away as Sri Lanka, but Iraq still does not possess a shortwave sender capable of broadcasting well beyond the region.

However, the major troop movements, including that of the USAF to the Gulf, was easily logged on HF. 11175 kHz is a primary HF channel for worldwide communications by the American Defense Department and is a good barometer to what is happening. It is never quiet.

On 30 September, several HF radiotelegraph stations ceased operating. The German coastal stations at Elmshorn, Norddeich and Kiel closed at 1800z. Sadly, we will no longer hear DAM, DAN or DAL on CW. The HF radio telephony station at Norddeich will also be QRT as from 31 December. Also, the HF coastal stations,

VCS in Halifax, Nova Scotia and PCJ at Curacao, Netherlands Antilles are no longer operational. Another mode which is rapidly disappearing is RADFAX.

The Russian Meteoxaf network suddenly disappeared in mid-September and the US Coastguard has notified users that the HF FAX service will shortly disappear. Australia's AXM on 5100 and 11030 kHz from Melbourne via Belconnen is still there, as is AXD Darwin on 10555 and 18060 kHz.

"Radio Free Asia", a stablemate of Radio Free Europe/Liberty, commenced on 29 September at 2300z. The broadcasts come from Washington but they were not giving away what channels, or from where they were broadcasting, until just before they commenced operations. However, it now is apparent that they are using sites in the former Soviet union, adjacent to the PRC, as well as leasing the Monitor Radio International site in Sapan. At 1500z they are on 7495 and 9430 kHz, whilst at 2330z they are on 6205, 7495 and 11825 kHz. Initially programming will be in standard Chinese (Putonghua) but I expect other dialects such as Cantonese and Hakka will shortly be added. I believe that this new clandestine will also be in Korean and the various languages of Myanmar (Burma). Vietnamese and Khmer will also be added later. I personally have not heard it yet but expect it will soon attract the jammers.

On 27 October, the BBC closed down a long standing frequency. I have been listening on 15070 kHz for over 40 years and I am informed that it goes back further to the forerunner of the BBC World Service, the famous Empire station in the mid-twenties. Apparently there have been complaints to the BBC from other European administrations wishing it to adhere to the broadcasting plan and cease operations on non-standard allocations. I believe that 15575 kHz is where the Beeb has gone to from 15070, yet signals are not as strong there compared to 15070.

Did you hear Radio St Helena on 26 October? This is one of the rarest and difficult DX catches, as it only operates once every two years. With the current Solar cycle minimum, it was difficult to hear it. I will have more news on that in the December issue. Until then the best of 73 and good listening!

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**Tell the advertiser
you saw it in the WIA
Amateur Radio
magazine!**

Ionospheric Update

Evan Jarman VK3ANI*

Solar Activity

Solar activity was at low to very low levels during the last quarter. For a fortnight (14-27 July) the observatory at Culgoora reported that the solar disc was without spots. The solar flux on 18 July was 64.9, which is below the theoretical minimum. When the earth's orbit was adjusted from the normal elliptical to the theoretical circular path the solar flux value returned to 67.0, the theoretical minimum.

There were three solar flares in July, the largest being a class X2.6 flare from 0905 till 0915 UTC on 9 July. This is the first X-class event reported by the IPS since November 1992. The others were M-class events about a day each side of the X flare.

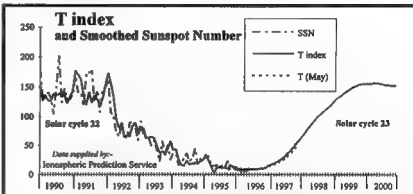
Ionospheric Activity

The greatest deviations in ionospheric activity during the quarter occurred in Darwin. Activity was depressed in the early UTC day by approximately 30% for most days. Some days, like 26 September, were volatile when activity was enhanced by 30% (0100 to 0400 UTC), then depressed by 30% (0400 to 0800 UTC), then enhanced by greater than 30% (1500 to 1700 UTC). Hobart also had some deviation from predicted values with 15% to 30% depression but on far fewer days than Darwin. Hobart also had some spread F and sporadic E activity reported during local evening hours.

The graph of ionospheric indices for the quarter shows that activity continued to decline. The monthly average of observed T index values being the best indicator.

Geomagnetic Activity

Geomagnetic activity was quiet to unsettled for the first two months of the quarter. Activity rose late in August and again during September to active and minor storm levels. This has continued into October. The plot of the Learmonth A index best demonstrates this activity.



T index

The Ionospheric Prediction service revised the T index values twice during the last quarter. The predicted values now run to the year 2000, the next predicted maximum in the solar cycle. The accompanying graphs demonstrate the expected trend. The previously published values (*Amateur Radio* May 1996 page 47) are included for comparison. They appear as a dotted line (T May) where they differ. The smoothed monthly sunspot number (SSN) is also

graphed to demonstrate that undefinable correlation between the two indices.

Status of the Solar Cycle

The Ionospheric Prediction Service issued this update during September, quoted in full:

We are now close to the beginning of a new solar cycle. For HF communications this means that the frequencies available for circuits are at their minimum; for geophysical exploration it is a period of "quiet" conditions with very few disturbances.

As the new cycle gets under way during 1997 the frequencies available to HF circuits will increase, as will the number of disruptions arising from events such as solar flares and disturbances to the ionosphere.

Solar cycles vary greatly in amplitude; recent cycles have been large but earlier cycles were of smaller size. IPS predictions for the coming solar cycle indicate that it will be a large cycle comparable with the last one. The cycle should reach its peak at a sunspot number of around 165 in the year 2000.

Ionospheric indices

July to September 1996

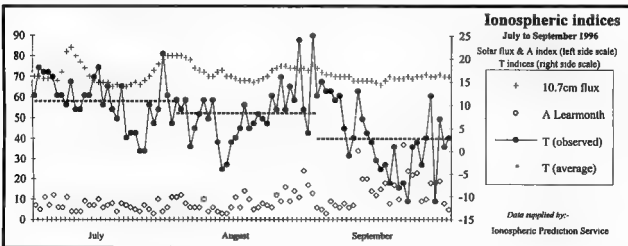
Solar flux & A index (left side scale)

T indices (right side scale)

- + 10.7cm flux
- o A Learmonth
- T (observed)
- * T (average)

Data supplied by:-

Ionospheric Prediction Service



For HF communications this will mean a wider spectrum of frequencies available for communications but more frequent disturbances. Conditions in 2000 should be very similar to those experienced in 1989-1992.

ASAPS V3.0

The Ionospheric Prediction Service has revised its Advanced Stand Alone Prediction System (ASAPS). The program, version 3.0, is now also Windows compatible (Microsoft Windows 3.1 or later). It is anticipated that from January 1997, the HF predictions will be prepared using ASAPS V3.00.

*C/o PO Box 2175, Caulfield Junction VIC 3161

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WIA MORSE PRACTICE TRANSMISSIONS

- VK2BWJ Nightly at 2000 local on 3550 kHz
- VK2RCW Continuous on 3699 kHz and 144.950 MHz 5 wpm, 8 wpm, 12 wpm
- VK3COD Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz
- VK3RCW Continuous on 145.650 MHz, 5 wpm, 10 wpm
- VK4WIT Monday at 0930 UTC on 3535 kHz
- VK4WCH Wednesday at 1000 UTC on 3535 kHz
- VK4AV Thursday at 0930 UTC on 3535 kHz
- VK4WIS Sunday at 0930 UTC on 3535 kHz
- VK5AWI Nightly at 2030 local on 3550 kHz
- VK5RCW Continuous on 144.975 MHz, 5 wpm to 12 wpm
- VK6RCW Continuous on 147.375 MHz, 4 wpm to 11 wpm
- VK6WIA Nightly at 1930 local on 146 700 MHz and nightly (except Saturday) at 1200 UTC on 3.555 MHz

Don't buy stolen equipment - check the serial number against the WIA Stolen Equipment Register first

Stolen Equipment

The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.

Make:	Kenwood
Model:	TR-2500
Serial Number:	3080575
Type:	2 metre handheld
Accessories:	Mobile mount and speaker/mic
Stolen from:	Coolangatta QLD
Date:	29 March 1995
Owner:	Steve VK2KFJ
Contact details:	VK2KFJ QTHR, or Coolangatta police

Make:	Alinco
Model:	DR-590T
Serial Number:	0001880
Type:	2 m/70 cm mobile
Accessories:	Frayed microphone cable
Stolen from:	Coolangatta QLD
Date:	29 March 1995
Owner:	Steve VK2KFJ
Contact details:	VK2KFJ QTHR, or Coolangatta police

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Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:-

O (Oswald)	THOMSON	L30859
AH (Alf)	WASS	VK2AHW
K C	OLDROYD	VK2BOC
K J	DRAPER	VK2VVV
F J (Fred)	HOUSE	VK3ARK
R (Richard)	GOSLIN	VK3SV
H W (Harold)	FRENCH	VK3ZRM
G O	MILLARD	VK6GK

Richard Goslin VK3SV

Richard Goslin died in Box Hill Hospital on 7 September 1996 at the age of 83 years.

Dick had wide interests, including cinematography in which he made some significant 8 mm films. His documentary of the filming of some of the scenes of "On the Beach" is in the State Film Archives. Dick's father was the founder of the Hawthorn City Band and Dick had a love of music and took pleasure in making tapes for his friends.

Radio was his life-long interest which he followed from the 1920s. In a busy life it was only when he saw retirement approaching that he devoted the time necessary to obtain an amateur licence. The first Novice licence in Victoria was issued on 20 August 1976 to Dick with the callsign VK3NAY. He commenced operation the same day with a home brew transceiver. He upgraded to his full call VK3SV on 17 January 1978.

Dick was one of those who manned the

WIA Victorian Division office during the period it was in Brunswick Street, Fitzroy and he met many amateurs there.

Dick will be well remembered for many lively QSOs in which his keen mind and brilliant memory kept us all on our toes.

Ellis Postage VK3FG

Vernin Jones VK3YE

Vernin Jones, VK3YE sadly passed away on August 28. Vernin taught Morse code for the Navy during the Second World War and conducted a class for the Victorian Division.

Aged 83, he was active on CW and an ardent builder of equipment until he relinquished his licence last year.

WIA Victoria extends condolences to Vernin's wife, Melva and to his daughter Lorraine.

Barry Wilton VK3XV

Stan Fortwood VK4BZO

Stan VK4BZO became a Silent Key on 12 July. Licensed only a few years ago, Stan quickly made numerous overseas friends via amateur radio. As a result he travelled overseas both to Europe and Japan. In Europe he attended FIREC (amateurs involved with railways) Convention.

Stan was only three weeks into his retirement after 39 years service with the railways.

Ron Graham VK4BRG

ar

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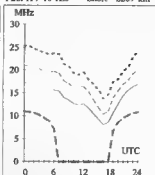
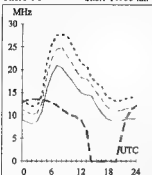
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Adelaide-Amsterdam 313 Brisbane-Auckland 123

First F 0-5 Short 15908 km First F 0-5 Short 2289 km



HF Predictions

Evan Jarman VK3ANL

T Index: 9



These graphs show the predicted diurnal variation in key frequencies for the nominated circuits. They also indicate a possibility of communication (percentage).

The frequencies identified in the legend are -

Upper Decade (10%)

Maximum Usable Frequency (50%)

E layer MUF

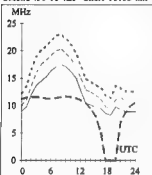
Optimum Working Frequency (90%)

Absorption Limiting Frequency

The predictions were made by one of the Ionospheric Prediction Service Stand Alone Prediction Systems. The T index used is shown above the legend. The Australian terminal azimuth (degrees), path length (kilometres) and propagation modes are also given for each circuit.

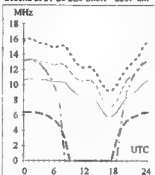
Adelaide-Capetown 226

Second 4F5-10 4E0 Short 10153 km



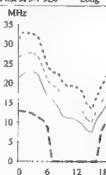
Brisbane-Auckland 123

Second 2F21-26 2E6 Short 2289 km



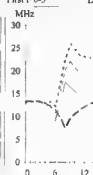
Canberra-Honolulu 50

First 3F3-7 3E0 Long 8407 km



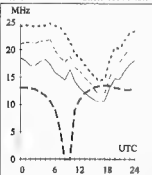
Darwin-London 145

First F 0-5 Long 26171 km



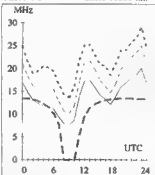
Adelaide-Lima 138

First F 0-5 Short 13576 km



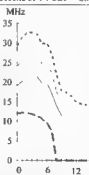
Brisbane-Barbados 109

First F 0-5 Short 16280 km



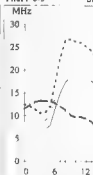
Canberra-Tokyo 352

Second 3F4-7 3E0 Short 7948 km



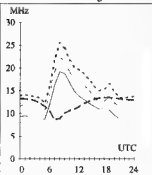
Darwin-London 325

First F 0-5 Short 13853 km



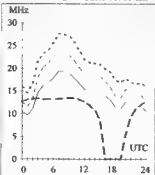
Adelaide-Vienna 126

First F 0-5 Long 24907 km



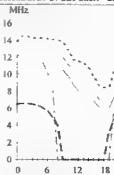
Brisbane-Harare 238

Second 4F2-6 4E0 Short 11988 km



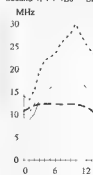
Canberra-Wellington 115

Second 2F20-27 2E6 Short 2324 km



Darwin-Pretoria 242

Second 4F4-7 4E0 Short 10619 km

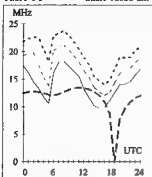


Hobart-Dakar

209

First F 0-5

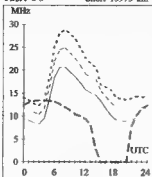
Short 16556 km

**Melbourne-Berlin**

310

First F 0-5

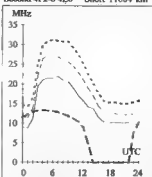
Short 15973 km

**Perth-Ankara**

308

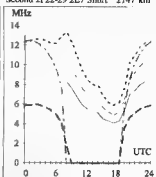
Second 4F2-6 4E0

Short 11684 km

**Sydney-Christchurch**

127

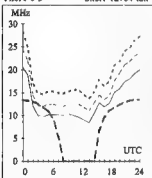
Second 2F22-29 2E7 Short 2147 km

**Hobart-San Francisco**

61

First F 0-5

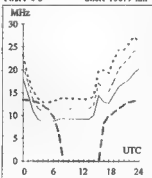
Short 12764 km

**Melbourne-Calgary**

49

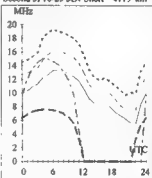
First F 0-5

Short 13879 km

**Perth-Kuala Lumpur**

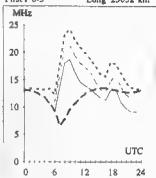
336

Second 3F16-25 3E4 Short 4179 km

**Sydney-London**

139

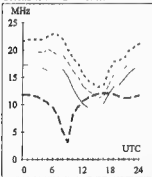
First F 0-5 Long 23032 km

**Hobart-Santiago**

149

Second 4F4-7 4E0

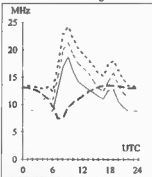
Short 10687 km

**Melbourne-Paris**

125

First F 0-5

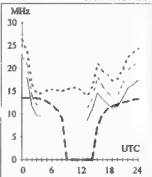
Long 23232 km

**Perth-Los Angeles**

72

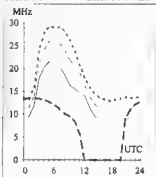
First F 0-5

Short 15020 km

**Sydney-Moscow**

317

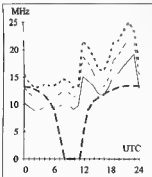
First F 0-5 Short 14494 km

**Hobart-New York**

80

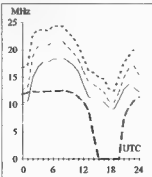
First F 0-5

Short 16610 km

**Melbourne-Zanzibar**

255

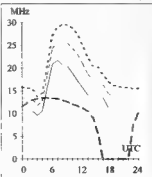
Second 4F4-7 4E0 Short 10952 km

**Perth-Madrid**

298

First F 0-5

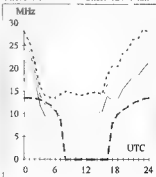
Short 14612 km

**Sydney-Seattle**

47

First F 0-5

Short 12470 km



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KDK 2025A/E Mark II 2 m FM txcvr, s/n 1026, 25 W, large dig display, memories, manual; **AZDEN PCS 300** 2 m HF, s/n 14602, 3 W, LCD, 8 memories, belt charger, c/case, manual. Both rigs exc cond. \$240 each, ono. Ben VK2DLB QTHR (02) 9623 4032

Yaesu FT209RH 2 m handheld, new battery, case, YH2 headset with VOX, vgc, s/n 180658, \$290 ono; **Alincon ALX2T** 2 m handheld s/n 31073328 new battery fitted, charging cradle, \$180 ono. Bruno VK2BPO QTHR (02) 9713 1831.

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Icom AH2A HF auto antenna tuner, surts IC735, with OPC137 cable adaptor to IC751 or IC745, new in carton, \$600 Brian VK3KQB QTHR (054) 53 1300.

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Icom IC736 HF/50 MHz transceiver, mint condition, with orig packaging, accessories, etc and service manual, \$2,900. Adam VK3ALM (03) 9794 7873 or (015) 36 2799.

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Note: All times are local. All frequencies MHz.

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FT-51R shown actual size

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Measuring just 123 x 57 x 26.5mm (H.W.D.), the FT-51R provides 2m/70cm Amateur transmit coverage, plus extended receiver coverage of 110-180MHz and 420-470MHz, with selectable AM for Airband reception. The FT-51's two receivers allow flexible VHF+VHF, UHF+UHF, or VHF+UHF operation, while the efficient FET technology provides 2.0W RF output on 2m and 1.5W output on 70cm from the supplied 4.8V 600mA/H Nicad battery pack. Up to 5 selectable Tx power levels are available (including an economy 20mW level), with 5W RF output available when using an optional 9.6V battery pack or mobile power adaptor.

To find local activity easily, the FT-51R's "Spectrum Scope" provides a visual indication of nearby busy frequencies, so you can keep an eye on whether a repeater or simplex channel may be in use. The Spectrum Scope can also be used in memory mode, and will even give an indication of signal strength. In addition to twin VFOs per band, the FT-51R also provides up to 120 memory channels, and alpha-numeric names (eg. repeater locations or callsigns) can be stored instead of a frequency if required.

For very straightforward operation the FT-51R provides scrolling User Help text messages that guide you through most function settings, as well as a selectable Auto Repeater Offset function to suit the Australian band plans. Other features include a range of battery life extenders (Auto battery saver, TX Save and Auto Power Off), CTCSS encode and decode, extensive DTMF-based selective paging, seven selectable frequency Step sizes, and an LCD voltmeter so you can monitor battery performance under load and estimate remaining battery life.

The FT-51R is supplied with a 600mA/H Nicad pack, AC charger, belt-clip, and an efficient hand-held antenna. To learn more about this exciting new transceiver, why not ask for a copy of our colour brochure and 8-page colour Product News booklet, or visit your local Ham store for a demonstration.

Cat D-3622

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